An analysis of the competitive performance of the Cameroonian cocoa industry

by

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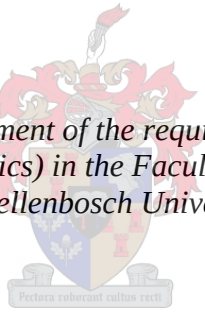

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Declaration

By submitting this thesis, I declare that the entirety of the work contained therein is my own original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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Dedication

I dedicate this work to my late Grandmother, Regina Abei, whose recent passing left a big hole in my heart. I almost gave up but your words of love and wisdom served as a source of encouragement to me. I will miss you a great deal, Grandma. May this work serve as a source of inspiration to my kids, Gila Chegou and Jaden Chegou.

Abstract

This study is aimed at investigating the competitive performance of the cocoa industry of Cameroon, 1961 to 2013, together with developing strategic proposals to sustain such performance. A five-step analytical framework adapted from Van Rooyen and Esterhuizen (2012), Jafta (2015), Boonzaaier (2015) and Angala (2015), which accommodate aspects of agri-value chain analysis were applied. Recommendations for improved competitiveness were developed with inputs from the industry.

Competitiveness in this study was defined as the ability of the Cameroonian cocao industry to sustain trade in international markets and to attract scarce resources such as land, labour, technology, management talents and capital from other competing economic activities while earning at least the opportunity costs of returns on such resources employed [adapted from the work of Freebairn (1986); Esterhuizen (2006) and Boonzaaier and Van Rooyen (2017).

From 1961 onwards, the Cameroonian cocoa industry experienced increased but unstable competitive performance levels. Four different stages of competitiveness were identified over this period, namely:

- Phase I: Post-colonial period; centrally regulated competitiveness (1961-1986)
- Phase II: The economic crisis and liberalisation period (1987 - 1993)
- Phase III: Recovering competitiveness (1994-2007)
- Phase IV: Increasing but fluctuating competitiveness with global challenges (2008 onwards)

Two data bases were used for measurement, through the Relative Trade Advantage (RTA) calculations, namely FAOSTATS, including only agricultural industry time series data from 1961 onwards and multi-sector/all industry ITC Data from 2001. Multisector-based competitiveness (ITC data) for the industry was generally higher than the agriculture-based competitiveness (FAOSTATS), indicating a lower ranking (RTA values) if only agricultural based information is used to determine competitive performance. Similar performance trends were however recorded for both data sets. RTA values range from 10-50 for the agriculture-based competitiveness, i.e. FAOSTATS and from 46 to as high as 204 for the multi-sector based competitiveness, i.e. ITC data. International comparisons between Cameroon and other major cocoa producing countries showed that, although the competitive performance of the country has recently dropped, since 2001, its performance within the international environment is still highly competitive with average ITC RTA of 79.3; just below Cote d'Ivoire (251.6) and Ghana (156.9). When compared to two other major agricultural exports from Cameroon, namely banana and coffee, cocoa proved to be more competitive.

The enquiry included value-chain comparisons between the various value-adding processes in the Cameroonian cocoa industry viz. cocoa beans (primary production) and value-added production, i.e. cocoa butter, paste, powder, chocolate, etc. This analysis revealed that cocoa beans were the most competitive while value-adding processing and manufacturing of chocolate and related products were the least competitive in the chain. An improvement of competitive performances of such local value-adding processes will lead to an overall improvement in the performance of the general industry.

Through the cocoa executive survey (CES), where leaders and executives of the Cameroon industry were interviewed, 72 factors were identified to directly influence the competitive performance of the industry. Respondents' ratings of these factors revealed that 54.6% of the factors were constraining to competitiveness while the rest of the factors (44.4%) were seen to enhance the industry's performance. This indicates that stakeholders view the general environment as not optimal in terms of enhancing competitive performance with room for improvement, despite the relatively high competitive performance measurement (RTA values) at which the cocoa industry of Cameroon operates. This shows an aggressive attitude striving towards improved competitiveness.

The 72 factors were grouped under the six Porter competitive determinants to facilitate strategic analysis and industry level planning, namely production factor conditions, demand and market conditions, related and supporting industries, firm's structure and strategy, government support and policy and chance factors.

Results showed that three of the determinants yielded a positive impact on the competitiveness of the industry, i.e. firm strategy and structure (3.02 out of 5), related and supporting industries (2.89 out of 5) and government support and policy (2.62 out of 5). The other determinants being production factor conditions (2.28 out of 5), demand and market conditions (2.42 out of 5) and chance factors (2.22 out of 5) were perceived as constraining with chance factors being the most constraining of them. This indicates that the Cameroon cocoa industry, while performing positively, can strive to increase competitiveness considerably by applying selected industry-based strategies.

Possible strategies that enhance competitive performance were considered - extending the recent analytical frameworks used by Boonzaaier (2015) and Angala (2015) - by testing the interrelationships within the Porter Diamond. Statistical comparisons were done between the various determinants and their respective factors to determine such interrelationships. This analysis serves as a guide for the industry as to what determinants/factors need to be dealt with in a coordinated manner or unilateral (single determinant focus) to achieve improvement. Results revealed that the Porter diamond determinants exhibit significant interrelationship except for between production factors and chance and opportunity factors; and firm strategy and industry structure and related and supporting industries.

These showed little or no interrelationships. In other words, their influence on the industry's performance is independent of each other re the improvement of the industry's competitive performance.

This study conducted a value-chain analysis approach where respondents were grouped into functional clusters. Cluster 1 represents stakeholders operating in the primary production of cocoa made up of cocoa producers, input and service providers and cocoa bean exporters (the agribusiness cluster) and cluster 2 actors representing the manufacturers and exporters, i.e. those businesses involved in the transformation of cocoa beans into semi-finished and finished products such as chocolate and chocolate related products (cocoa processors). Although the ratings of these two clusters showed similar patterns, indicating agreement/consensus on relevant factors and determinants, cluster 1 participants generally gave lower ratings than their cluster 2 counterpart did, i.e. stakeholders in cluster 2 were more positive about the industry's performance. This can be related to their position of more direct exposure to final markets, while agribusiness were more exposed to production risks.

From the findings, several industry and government level actions were proposed to improve the competitive performance of the industry. Strategies include production cost considerations such as: investment in input production plants, creation of product technology awareness through advertising campaigns and demonstrations at various points in the chain, the need to expand local research and development facilities inter alia through the development of private research activities, and the identification and accessing of new markets through diversification. Strategies to increase competitiveness also related to human capital training and development, the review of the financial and credit policies by financial institutions to promote innovation and expansion and the review the land tenure system to create a more investment friendly environment. Improved collaboration in value-chain management and analysis through the increased sharing of relevant information (seminars, work sessions and research activities), were also viewed as relevant as such actions will enable more informed decisions and strategies to improve the industry's performance, in particular between farm-level producers and the rest of the value-chain i.e. increased competitiveness will require improved value chain coordination strategies.

Opsomming

Die belangrike rol wat landbou en die kakaobedryf in die ekonomie van Kameroen speel, kan nie genoeg beklemtoon word nie, aangesien dit bydra tot die land se uitvoere terwyl 'n belangrike bron van indiensneming in die land is. Dit is in hierdie lig dat die studie daarop gemik is om die mededingende prestasie van die kakaobedryf te ondersoek, tesame met die ontwikkeling van voorstelle om die prestasies te verbeter. 'n Vyf-stap-analitiese raamwerk, aangepas van Van Rooyen en Esterhuizen (2012), Jafta (2015), Boonzaaier (2015) en Angala (2015) en wat aspekte van agri-waarde ketting analise akkommodeer, word toegepas om 'n omvattende analise van die langtermyn mededingende prestasie van die kakaobedryf van Kameroen tussen 1961-2013 uit te voer. Aanbevelings vir verbeterde mededingendheid is ontwikkel met insette van die bedryf.

Mededingendheid is gedefinieer as die vermoë van die Kameroense kakao bedryf om handel in internasionale markte te handhaaf en om skaars hulpbronne soos grond, arbeid, tegnologie, bestuurstalente en kapitaal uit ander mededingende ekonomiese aktiwiteite te lok terwyl hulle ten minste die geleentheidskoste op sulke hulpbronne verdien. [aangepas uit die werk van Freebairn (1986); Esterhuizen (2006) en Boonzaaier en Van Rooyen (2017)}.

Vanaf 1961 het die Kameroense kakao-industrie verhoogde, maar fluktuerende mededingende prestasievlakke beleef. Vier verskillende stadiums van mededingendheid is oor hierdie tydperk geïdentifiseer, naamlik:

¬ Fase I: Na-koloniaalse tydperk; sentraal gereguleerde mededingendheid (1961-1986)
¬ Fase II: Die ekonomiese krisis en ekonomiese liberaliseringstydperk (1987 – 1993)
¬ Fase III: Mededingendheid herstel (1994-2007)
¬ Fase IV: Toenemende maar fluktuerende mededingendheid met globale uitdagings (2008 en verder)

Twee databasisse is gebruik vir meting, deur middel van die Relatiewe Handelsvoordeel (RTA) berekeninge, naamlik FAOSTATS, wat slegs tydreeksdata vir die landboubedryf en die sektors ITC Data bevat. Multisektorgebaseerde mededingendheid (ITC-data) vir die bedryf was oor die algemeen hoër as die landbou-gebaseerde mededingendheid (FAOSTATS), wat 'n laer posisie (RTA-waardes) aandui as slegs landbougebaseerde inligting gebruik word om mededingende prestasie te bepaal. Soortgelyke tendense vir beide data reekse is egter aangeteken. RTA waardes wissel van 10-50 vir die landbou-gebaseerde mededingendheid, d.w.s FAOSTATS en van 46 tot so hoog as 204 vir die multisektor gebaseerde mededingendheid, d.w.s ITC data. Internasionale vergelykings tussen Kameroen en ander groot kakaoproduserende lande het getoon dat hoewel die mededingende prestasie van die land onlangs gedaal het, is die prestasie binne die internasionale omgewing steeds hoogs mededingend met die gemiddelde ITC-RTA van 79,3; net onder die Cote d'Ivoire (251.6) en Ghana (156.9). In vergelyking met twee ander groot uitvoerbedrywe in Kameroen, naamlik piesang en koffie, neig kakao om meer mededingend te wees.
Die ondersoek sluit in waardeketting vergelykings by wyse van tussen die verskillende waardetoevoegingsprosesse in die Kameroense kakao-industrie, naamlik kakaobone (primêre produksie) en toegevoegde waardeproduksie - kakao botter, smeer, poeier, sjokolade, ens. Hierdie analise het aan die lig gebring dat kakao bone mees mededingend is terwyl die waarde toevoeging van sjokolade en verwante produkte die minste mededingend in die ketting was. 'n Verbetering van

mededingende prestasies van die verskillende plaaslike waardetoevoegingsprosesse sal lei tot 'n verbetering in die mededingendheidsprestasie van die algemene kakao bedryf.

Deur die kakaobestuursopname (CES), waar leiers en uitvoerende beamptes van die Kameroenbedryf onderhoude ondergaan het, is 72 faktore geïdentifiseer om die mededingende prestasie van die bedryf direk te beïnvloed. Respondente se graderings van hierdie faktore het getoon dat 54,6% van die faktore beperkend was tot mededingendheid terwyl die res van die faktore (44,4%) gesien is om die bedryf se prestasie te verbeter. Dit dui daarop dat belanghebbendes die kakao bedryf as minder mededingend sien as die hoë mededingende prestasiemeting (RTA waardes). Dit toon 'n aggressiewe houding deur die bedryf wat steeds streef na verbeterde mededingendheid. Die 72 faktore is gegroepeer onder die ses Porter-determinante om strategiese analise en bedryfsvlakbeplanning te fasiliteer, naamlik produksiefaktor omstandighede, vraag- en marktoestande, verwante en ondersteunende nywerhede, firma strategie en bedryfstruktuur, owerheidsondersteuning en beleid en toevallingsfaktore.

Resultate het verder getoon dat drie van die Porter determinante 'n positiewe impak op die mededingendheid van die bedryf gehad het, naamlik firma strategie en bedryfstruktuur (3.02 uit 5), verwante en ondersteunende bedrywe (2,89 uit 5) en owerheidsondersteuning en -beleid (2,62 uit 5). Die ander determinante insluitend produksiefaktor toestande (2.28 uit 5), vraag- en marktoestande (2.42 uit 5) en toevalfaktore (2.22 uit 5) is beskou as beperkinge met toevallingsfaktore wat mees beprekend. Dit dui daarop dat die kakaobedryf in Kameroen, terwyl dit positief mededingend presteer, streef om die mededingendheid steeds te verhoog deur geselekteerde industrie-gebaseerde strategieë toe te pas.

Moontlike strategieë wat mededingende prestasie bevorder, is verder ontleed deur die onderlinge verband tussen die Porter Diamond determinante te toets. Statistiese vergelykings is tussen die verskillende determinante en hul onderskeie faktore gedoen om sulke onderlinge verwantskappe te bepaal. Hierdie analise dien as 'n riglyn vir die bedryf oor watter determinante / faktore op 'n gekoördineerde wyse gehanteer moet word.

Uit die resultate blyk dit dat al ses Porter diamant determinante 'n sekere mate van onderlinge verhouding toon, behalwe produksiefaktore en kans- en geleentheidsfaktore onderling; vaste strategie en bedryfstruktuur struktuur en verwante en ondersteunende nywerhede onderling, wat min of geen onderlinge verband tussen hul aktiwiteite getoon het. Met ander woorde, hul invloed op die bedryf se prestasie is onafhanklik van mekaar, tov die verbetering van die mededingendheids-prestasie van die bedryf.

Die studie het ook die waardekettingbenadering geakkommodeer waar respondente in funksionele groepe gegroepeer is. Groep 1 verteenwoordig belanghebbendes wat betrokke is by die primêre produksie van kakao wat bestaan uit kakaoprodusente, invoer- en diensverskaffers en uitvoerders (die agribesigheidskluster) en groep 2-akteurs wat die vervaardigers en uitvoerders verteenwoordig, d.w.s daardie besighede wat betrokke is by die omskakeling van kakaobone in semi -afgewerkte en klaarprodukte soos sjokolade- en sjokoladeverwante produkte (kakaoverwerkers). Alhoewel die faktorgraderings van hierdie twee groepe soortgelyke patrone toon, wat op konsensus dui oor relevante faktore en determinante, het groep 1-deelnemers oor die algemeen laer graderings gegee as wat hul groep 2-eweknie gedoen het, d.w.s belanghebbendes in groep 2 was meer positief oor die bedryf se mededingende prestasie. Dit kan verband hou met hul posisie van meer direkte blootstelling aan finale markte, terwyl agribesighede meer aan die risiko van primere produksie bloot gestel.

Om die waardekettinganalise uit te brei, is 'n hoofkomponentanalise (PCA) uitgevoer om die hoogs gekorreleerde of konsensus faktore te identifiseer en die faktore waarvoor belanghebbendes variasie in menings gehad het. Die identifisering van die konsensus- en nie-konsensusfaktore het die keuse van faktore moontlik gemaak wat gesamentlike/konsensus strategieë vereis het en dié wat unieke / groeperingspesifieke strategieë vereis het om die bedryf se prestasie te verbeter.

Vanuit die bevindinge is verskeie strategiese bedryfs- en regeringsaksies voorgestel om die mededingende prestasie van die bedryf te verbeter. Sommige van die strategieë sluit in produksie oorwegings soos belegging in insetproduksie-aanlegte, skepping van produktegnologie-bewustheid deur advertensieveldtogte en demonstrasies op verskeie punte in die ketting, die behoefte om plaaslike navorsings- en ontwikkelingsfasiliteite uit te brei, onder meer deur die ontwikkeling van privaatnavorsingsaktiwiteite; ook die identifisering en toegang van nuwe markte deur diversifikasie. Strategieësluit ook opleiding en ontwikkeling van mensekapitaal, die hersiening van finansiële en kredietbeleid deur finansiële instellings om innovasie en uitbreiding te bevorder en die hersiening van die grondbesitstelsel om 'n meer beleggingsvriendelike omgewing te skep. Verbeterde samewerking in waardekettingbestuur en -analise deur die toenemende deel van relevante inligting (seminare, werksessies en navorsingsaktiwiteite) is ook voorgestel aangesien sulke aksies meer ingeligte besluite en strategieë sal moontlik maak om die bedryf se prestasie te verbeter, veral tussen produsente en die res van die waardeketting, d.w.s verhoogde mededingendheid verbeterde waardekettingkoördinasie.

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CAADP	Comprehensive Africa Agricultural Development Program
CCIC	Interprofessional Council for Cocoa and Coffee
CES	Cocoa Executive Survey
FAO	Food and Agricultural Organisation
FCFA	Franc of the Central African Federation
FFS	Farmer field school
GDP	Gross Domestic Product
IMF	International Monetary Fund
IPM	Integrated Pest Management Program
ITC	International Trade Centre
MAI	Market Attractiveness Index
MDGs	Millennium Development Goals
ONCC	Office National du Café et du Cacao
ONCPB	Office National de Commercialisation de Produits de Base
PCA	Principal Component Analysis
RTA	Relative Trade Advantage
SAP	Structural Adjustment Programs
SPS	Sanitary and Phytosanitary Standards
SSA	Sub Saharan Africa
STCP	Sustainable tree crop program
UNIDO	United Nations Industrial Development Organisation
WCF	World Cocoa Foundation.

CHAPTER ONE: INTRODUCTION

Competitiveness is a necessary ingredient for agricultural existence in today's world. If you want to be competitive you must manage it; you must measure and analyse it; otherwise it just remains a "good idea or theory" (Van Rooyen, 2016).

1.1 Background

After a period of neglect, since the 1980s, there has been a "new view" of the role and potential of agriculture as a driver of economic growth in developing environments. This realisation, given the potential of the agricultural sector to stimulate growth and development, prompted the need for increased intervention and investment. Agriculture in Africa was thus viewed since mid-2000 to be contributing significantly to achieving the millennium development goals (MDGs) by 2015, with agribusiness as an important driver for such development impacts (Roepstorff, Wiggins & Hawkins, 2011; World Bank, 2013a; Van Rooyen, 2014). This realisation has prompted the prioritisation of agriculture by many African governments and from a growing revenue base; they have increased the proportion of their national budgets going to this vital sector (Ngongi, 2016).

A vast proportion of Africa's population live in rural areas characterised by poverty and deprivation and with most households depending directly or indirectly on agriculture for their livelihood. Agriculture not only employs a vast majority of the African labour force but accounts for approximately 24 percent of the continent's annual growth with the share even larger in most of Africa's low income countries (World Bank 2013a). The importance of this sector in the continent plays in prominent role in achieving economic growth and development as well as poverty reduction and food security. Although the agricultural sector has been identified as an engine for economic development in most African countries, it is still under developed characterised by low production and diminishing food supplies making most of the African countries now food importers rather than exporters (Mushendami, Biwa and Gaomab II, 2006).

Prior to the Green Revolution, agriculture was seen to contribute passively to development of a country by providing labour and food to the industrial sector. In other words economic growth and development could only be achieved through the reallocation of resources from the low productive agricultural sector to the industrial sector which was more productive and yielded higher returns (Lewis, 1954). This view was however changed after the Green Revolution that took place in Asia during the late 1960s to the early 1970s (Diao, Hazell and Thurlow, 2010). According to Johnston and Mellor (1961), agriculture

played an important role in economic growth and development of a country particularly during the early stages of industrialization. According to them, economic growth and development could be achieved through linkages between the agricultural and the non-agricultural sectors. Increased agricultural productivity contributes to economic growth in five ways namely a) increasing food supply for domestic consumption b) expansion of agricultural exports thereby increasing foreign exchange earnings c) increasing net cash incomes of the rural population, d) providing labour for the manufacturing sector and e) contribute to capital formation. The agricultural sector in this case was considered to play an active role in influencing economic growth and development as the industrial sector (Johnston and Mellor (1961).

It is the this light of agriculture-led economic growth and development that in the mid-2000s, the new partnership for Africa's development (NEPAD) initiated the Comprehensive Africa Agricultural Development Program (CAADP), in a bid to encourage governments to invest more in agriculture. This program encouraged member countries to aim to contribute 10% of their annual budgets to investments in agriculture (Kofi Annan, 2013). It was expected that with increased investment in agriculture, a 6% growth rate in agriculture could be achieved. Although implementation of the CAADP has been slow in some countries, other countries such as Zambia, Mozambique and Liberia amongst others, have successfully adapted and exceeded the anticipated 6% growth rate target (Oluoch-Kosura & Sikei, 2013). In a bid to ensure that agriculture contributes substantially to economic growth, the CAADP was put in place in order to assist members of the African Union to effectively respond to rising food prices and other pressures (Webber & Labaste, 2010). Many African exporters responded and have gained access to new markets and boosted their exports but unless their business environment and competitiveness are improved, their products will yield lower values in the world market. There is therefore the need to improve the agricultural competitiveness, along the full value chain, in order to achieve and sustain growth (Webber & Labaste, 2010).
According to Johnston and Mellor (2009) agriculture-led economic growth can be achieved It is worth

The importance of agribusiness competitiveness in this process cannot be overemphasized. Agribusiness can help in catalysing the economic transformation of a country through the creation of industries in the agricultural sector (World Bank, 2013a; Wiggins et al, 2011; Van Rooyen, 2014; FAO, 2014). These industries will in turn, bring in much-needed jobs, which will help in improving the incomes of individuals and households. A direct consequence of successful investment agribusiness will be the growth of the overall agricultural sector, as these industries will provide new markets, resulting in the expansion of a strong input sector (World Bank, 2013a). Agriculture and agribusiness in Sub-Saharan Africa (SSA) show a promising future and their contribution is expected to triple from US$ 313 billion in 2010 to an outstanding US$ 1trillion by 2030. Both sectors are responsible for almost half of the Gross Domestic Product (GDP) in Africa, accounting for 24% and 20% respectively (World

Bank, 2013a). Although Africa enjoys a number of comparative advantages in agriculture, the agricultural and agribusiness sectors are still underperforming. However, the growing middle economic/social class and increased urbanisation, coupled with increasing domestic and global demand, create strong opportunities for expansion for the agricultural sector (World Bank, 2013a).

Given these opportunities, the agricultural sector can perform better if it is more competitive, inter alia boosting exports and replacing imports through increased productivity (van Rooyen, 2014).

This study focuses on measuring competitive performance and identifying the issues that constrain and promote the competitive performance of the Cameroonian cocoa industry. It builds on contemporary frameworks and methods of analysis, applied to the agricultural sector and introduces refinements by adding value-chain analysis and statistical analysis to the study.

Cameroon, a country of 22.7 million people, situated in the central part of Africa, provides favourable ecological conditions for agro-food production and oil resources, making it the best-endowed primary commodity economies in Sub-Saharan Africa (World Bank, 2016a; KIT, 2010). The country can be classified as a lower middle-income country, with an annual GDP growth rate of 5.6% as of 2013, and total GDP per capita income of 29.2 billion in 2015 (World Bank, 2016a).

The economy of Cameroon is mainly agrarian, where agriculture and the exploitation of natural resources are the backbone of the country's economic development. Before the late 1970s, agriculture was the main engine of growth in the country, accounting for 80% of the country's total exports, with the main exports being cocoa, coffee and cotton (Tchokote, Dontsop & Onyebuchi, 2015). Growth in the oil sector in the 70s resulted in the reallocation of resources from agriculture to the oil industry, resulting in stagnation in the agricultural sector. The sector subsequently regained its grounds and currently plays a vital role in the economy of Cameroon, accounting for approximately 20.6% of the GDP, and employing about 70% of the population as of 2001 (CIA, 2016). Although the economic growth rate remained weak as a result of the negative effects of high oil prices on the non-oil sectors, agriculture still experienced a 3.3% growth in 2007 (World Bank, 2013b). The growth and development of this sector is viewed as essential for the economy in terms of job creation, diversification, poverty reduction, overall growth and exports (World Bank, 2013b). Cocoa beans are the most profitable of the country's exports, amounting to US$ 767,181 000 in 2015, and making Cameroon the fifth largest producer of cocoa in the world (ITC, 2016).

Cocoa is a major perennial cash crop grown predominantly by small-scale farmers and is an important source of income to these farmers (Kimengsi & Azibo, 2015). The crop is a source of livelihood for approximately 1.4 million people, and accounted for 14% of the country's export income in 2009 (KIT, 2010). There are about 250 000 cocoa farms in Cameroon, occupying about 420 000 hectares of land

(KIT, 2010). Cameroon is the fourth largest producer of cocoa in Africa, producing an average of 210 000 tons of cocoa annually (ICCO, 2012). Approximately 83.3% of the cocoa exports from Cameroon is in the raw state (cocoa beans) with its main destination being the Netherlands (67.6%), and Malaysia, Belgium, Spain and Indonesia having 13.3%, 5.7% and 5.5% respectively (ITC, 2016). Cocoa from Cameroon possesses distinctive characteristics from that of other countries in terms of its strong chocolate flavour and acceptable level of acidity, good bean size and high butter content, thereby meeting the quality desire of the consumers both at home and internationally (Gilbert & Tollens, 2002). Uba (1999) cites cocoa from Cameroon as the most sought after cocoa brand in the international market.

After independence in the 1960s, the government was fully in control of the sector through the Office National de Commercialisation de Produits de Base (ONCPB). This institution was responsible for providing inputs, fixing cocoa prices at both farm-gate and export levels, collection of the cocoa from the farmers, quality control regulations and consequently controlling exports. The ONCPB served as a contract negotiator for private exporters in the Francophone region of the country and in the Anglophone region, it acted as a marketing board (Dada, 2007). The ONCPB was however short-lived owing to mismanagement and embezzlement, coupled with the fuel and dollar crisis in 1975 marking the start of a turbulent environment for the cocoa sector (Fule, 2013). In the early 1980s, there was a decline in the prices of primary raw materials such as cocoa, coffee and oil in the international market. This decline was due to low economic growth rates in the industrial countries, reduction in the intensity of use of the commodities, and the abundance of these commodities in the international market (IMF, 1987). To deal with these changes and promote export-led growth, most African countries resorted to market reforms through the implementation of the structural adjustment loans of the World Bank (Dada, 2007). These market reforms involved the opening of the domestic and export markets to competition, reduction in government involvement in the production and marketing of agricultural products and in this case cocoa, reducing distortions in commodity prices and encouraging the involvement of private sectors. The government consequently pulled out of the cocoa sector resulting in the removal of various support mechanisms. In a nutshell, these reforms involved the liberalisation of the sector (Akimaya *et al.*, 2003).

The reforms and liberalization of the cocoa sector did not however achieve the desired purpose. The disenrollment of the state from the cocoa sector had direct implications resulting in the collapse of the ONCPB and the removal of all government subsidies and those in the past (Dada, 2007). Although the ONCPB was replaced by the Office National du Café et du Cacao (ONCC) to set prices and control the quality of cocoa, the ONCC proved to be inefficient and the government therefore withdrew its rights to quality control and offering them to private firms. This liberalisation of the cocoa sector resulted in a drop in the proportion of the export sector handled by the government from 80% to 20% (Dada, 2007).

In order reduce external debt and boost foreign earnings through agricultural exports, the government of Cameroon has engaged in various campaigns to revive the export of prominent agricultural crops such as cocoa, coffee and banana (Kandem, 2012).

In 2009, the World Bank approved support for the Project of Improvement of the Agricultural Competitiveness (PIAC). The project, which was expected to run from 2009 to 2015, was aimed at improving the competitiveness of qualified producer organisations working in specific agricultural sectors in Cameroon through increased production, productivity and overall farm incomes (World Bank, 2013b). In 2010, the government of Cameroon with the support of the International Funds for Agricultural development (IFAD) launched the *Projet d'Appui au Développement des Filières Agricoles* (PADEF -Project for the Development of Agricultural Sectors). The PADEF envisaged that boosting sustainable development and competitiveness of the rice and onion sectors would lead to a reduction in poverty in the rural areas, surge incomes and an overall improvement in food security as stipulated by the MDGs (PADEF, 2014).

Businesses and governments have been motivated to assess and improve on the competitiveness of firms, sectors and industries as a whole due to globalization and trade liberalisation (Porter, 1998; Ismea, 1999). Trade liberalisation created a new competitive environment and cocoa farmers, as well as other agricultural producers, had to adapt to these changes and compete with new producers in order to achieve growth and sustainability.

Given the importance of the cocoa industry to the economy of Cameroon as both a means of livelihood and an earner of foreign exchange, it is therefore vital to conduct an analysis on the competitiveness of the industry. Boansi (2013) states that in order to attain food security and earn foreign exchange through exports, most developing countries have engaged in regimes that develop and sustain the sub-sectors on which agriculture strongly depends and, in this case, the cocoa sector of Cameroon. One important measure to achieve and sustain growth will be to enhance the competitiveness performance of various sectors in order to develop strategies on how such growth can be improved and sustained (Porter, 1990; Esterhuizen, 2006; Van Rooyen, Esterhuizen & Stroebel, 2011).

1.2 Problem statement

Countries are able to enjoy the consumption of goods in which they have a production disadvantage through trade, while specialising in those goods in which they have a comparative advantage (Irwin, 1996). It is in this light that Cameroon tends to produce and export agricultural products particularly cocoa, coffee and cotton amongst others. The country's vast agricultural resources, population and the favourable natural conditions provide it with this comparative advantage (Noula, Linyong & Munchunga, 2013). Cocoa provides a source of livelihood, not only to Cameroon, but also to over 50

countries across Africa, Asia, Latin America and the Caribbean (Kaplinsky, 2004). The internal and external factors relating to any given country are responsible for the productivity, growth and competitiveness of the agricultural sector of said country. These internal factors comprise of physical, technological, micro and macroeconomic as well as policy related issues, while world prices and trade policies in the international market are examples of external factors. The competitive performance of any economic sector, industry or firm, including the agricultural sector is therefore determined by the manner in which these factors are handled (Porter, 1990; Porter, 1998; Oluoch-Kosura & Sikei, 2013). Cameroon's cocoa industry operates in such an "open trade" environment.

The cocoa industry of Cameroon has witnessed a series of fluctuations since 1961, resulting from physical, political as well as macroeconomic policy changes. This fluctuating performance can be accounted for by events such as the period of independence, economic restructuring and the discovery of crude oil in the mid- to late 1970s, economic crises and the deregulation of the sector among others. In order to deal with these fluctuations and improve on the performance of the industry, the government of Cameroon has implemented various reform policies including the "modernization program" launched in 2006 (Fule, 2013), the Sustainable Tree Crop Programme (STCP) and the UPCOCOA project which was established in 2006. In addition, extension services in the form of the farmer field school (FFS) and the integrated pest management program (IPM) have also been established (KIT, 2010). The most recent project is the "New Generation" program launched in 2012 by the Inter-professional Council for Cocoa and Coffee (CCIC) whose objective is to rejuvenate both the labour force and cocoa plantations in Cameroon. Despite the recent efforts by the government to improve on the performance of the cocoa sector, negative trade arrangements such as the European Union's rejection of 2 000 tons of cocoa in 2013 and adverse climatic conditions have continued to hinder the growth of the sector. Although the sector faces some challenges, it remains the fifth largest producer of cocoa in the world market. It is for this reason that this study seeks to carry out a comprehensive analysis to determine the industry's competitive performance over this period and identify the factors that hinder and promote the competitive performance of the industry.

Freebairn (1986) defines competitiveness as a firm or industry's ability to deliver products to both domestic and international markets at a price as good or better than other suppliers, while earning at least the opportunity costs of returns on resources employed and, as such, is able to attract scarce resources such as land, human capital, labour and capital from other economic activities. As stipulated in this definition, competitiveness is influenced by both domestic and international factors. This definition will be adopted in the context of the Cameroonian cocoa industry to determine its competitive performance in the domestic and international markets.

A number of studies have been carried out on the economics of the Cameroonian cocoa industry (Dada, 2007; Nyemeck *et al*., 2008; Kandem *et al*., 2010; Kandem, 2012; Tosam and Njimanted, 2013;Kimengsi and Azibo, 2015 etc.) however, and this defines the core problem attended to in this study, none of these studies focused or viewed competitiveness as an important factor, as well as how it relates to global trade. A comprehensive view of the competitive performance of the industry pertaining to the long-term trends and performance of the industry, as well as the factors responsible for such performance, is vital to better understand the cocoa industry and support challenge to formulate strategies to improve the performance of the industry.

This study takes a comprehensive view of competitiveness, i.e. defining, measuring and analysing the "competitiveness performance of the Cameroonian cocoa industry". In evaluating the competitiveness of the industry, the study will assess trade performance of the cocoa industry since independence in the 1960s to date. This period will take into account the period of the liberalisation of trade and the devaluation of the FCFA (local currency) in the mid-1990s as well as the state of the industry 20 years after the economic depression of Cameroon. This period was chosen in order to reflect the performance of the industry under the different agricultural policies that have been implemented by the government.

The study will aim at identifying and analysing the constraints and promoting factors of competitiveness and translate such findings into industry level strategies that could be used to improve and sustain the competitiveness of the industry. Therefore, it will also be important to involve industry role players and executives.

1.3 Objectives of the study

For the cocoa industry of Cameroon to sustain economic growth, social development, and employment, it needs to operate at a level that is competitive with the rest of the local economy and on the planet. The main objective of this study was to develop a comprehensive statement on the competitive performance of the Cameroonian cocoa industry and the factors and determinants affecting such performance. To achieve this, certain secondary objectives were required:

- To contextualise cocoa production in the Cameroonian economy, taking into consideration the historical and recent context.
- To obtain an overview of the current production and trade pattern of the Cameroonian cocoa industry.
- Defining competitive performance of the Cameroonian cocoa industry in an appropriate manner to assist with the measurement and analysis of competitive performance.
- To measure the competitive performance of the Cameroonian cocoa industry using appropriate analytical techniques.

- To analyse such performance trends by determining the factors and determinants that hinder/promote the competitiveness of the industry.
- Propose strategies that would improve on the competitiveness of the industry.

1.4. Research Questions

This study followed an industry-level approach to define and analyse competitive performance and will attempt to answer the following research questions:

- How can competitiveness be defined within the context of the Cameroonian cocoa industry?
- What data and tools can be used to measure competitiveness and, how competitive is the cocoa industry of Cameroon in a global context and with other industries?
- How to determine the factors that determine the competitive performance of the Cameroonian cocoa industry?
- How can the cocoa industry of Cameroon improve on and sustain its competitiveness?

1.5 Hypothesis

Based on the economic position of cocoa in Cameroon and the performance over time the following hypotheses were formulated and will be tested:

- H1: The cocoa industry of Cameroon has generally performed competitively in the global market from the period 1961 to 2013
- H2: A wide range of factors, such as political choices, and government policy, global demand, trade arrangements, marketing and firm strategy, exchange rate and other sporadic/chance factors, together with natural endowments, determine the competitive advantage and global performance of the cocoa industry of Cameroon i.e. not only one dominant factor. Factors influencing competitive performance are interrelated and will require a comprehensive strategic action to improve the competitive performance of this industry.

1.6 Analytical frame work and research methodology

1.6.1 Analytical framework

In order to analyse the competitiveness performance of the cocoa industry of Cameroon, the study will adopt a qualitative and quantitative approach, while making use of a set of innovative and internationally approved techniques. A first effort to comprehensively analyse competiveness in the agricultural sector was recorded in the ISMEA report (1999), where the status of the “new countries”

to be added to the European Union was analysed. From this framework refinements were introduced by Van Rooyen, Esterhuizen &
Doyer (2000); Esterhuizen (2006), Esterhuizen & Van Rooyen (2006), Van Rooyen *et al*. (2011), Van Rooyen & Esterhuizen (2012), Jafta (2014), Boonzaaier (2015) and Angala (2015).This basic framework will be adopted in this study to perform a comprehensive analysis of the competitive performance of the cocoa industry of Cameroon. In this study certain innovations will be introduced, extending the framework to fit the Cameroon cacao situation better. Extensions will be made firstly, by extending the framework beyond the primary production level, to make comparisons at the various value-adding processes along the value chain, i.e. cocoa beans, cocoa butter, cocoa paste, cocoa powder, chocolate and related products. Secondly, the study will seek to examine if the Porter Diamond determinants affect the industry's performance independently or work in a close relationship (are interrelated) in the case of the cocoa industry of Cameroon (refer to hypothesis 2 above). This will show how interrelated the determinants might be and if they are interrelated, how they may be dealt with accordingly in the strategy and planning process of the industry. A step-wise framework, where the results of a previous step will inform a next step, which will be used in this study to analyse the competitiveness of the cocoa industry of Cameroon is:

Step 1: Define competitiveness within the context of the cocoa industry of Cameroon.
Step 2: Measure the competitiveness of the cocoa industry of Cameroon.
Step 3: Identify the factors that promote and deter the competitiveness of the cocoa industry of Cameroon along the value chain.
Step 4: Analyse the determinants and factors influencing competitiveness and consider their relationship to each other.
Step 5: Use the information to make recommendations on how the industry can improve competitiveness, taking note of value-chain differences and interrelatedness of factors.

1.6.2 Data

The study was conducted in the South West province of Cameroon, which is the main cocoa producing region in the country, accounting for approximately 58% of the cocoa produced. In order to analyse the competitiveness performance of the industry, the study made use of primary and secondary data, secondary data for RTA measurements, as well as the trade performance of Cameroonian cocoa in the global market. Such information was sourced from the International Trade Centre (ITC) (data since 2001) and the Food and Agricultural Organisation of the United Nations (FAO) (data since 1961).

Primary data will seek to identify the factors that constrain and promote competitiveness of the cocoa industry of Cameroon and such information will be obtained from questionnaires and interviews with

key industry stakeholders. The two databases; FAO and ITC, will be used because they present two distinct sets of databases. FAO provides data from 1961 to 2013 and is more exclusive to agricultural related products, i.e. competitiveness in the agricultural industry only. The FAO provides data for about 400 agricultural related products for about 245 countries for the period 1961 to 2013. The ITC on the other hand is more comprehensive, providing data for about 5 300 harmonised system coded products – both agricultural and other products, from about 220 countries from 2001 to 2015. Furthermore, statistical analyses were used to determine the influence of the factors affecting competitiveness (positive or negative) and their relationship with each other. This was one of the innovations of the study.

1.7 Importance of the study

There is a general and accepted consensus on the significant role played by cocoa as a key driver to achieving economic growth in most cocoa producing countries, in particular in the case of Cameroon. Cocoa is seen to be a highly profitable and competitive cash crop and is seen to generate the highest income among other agricultural activities in the world market (UNCTAD, 2004, cited in Tosam & Njimanted, 2013). Cocoa and cocoa related products contributed about 47% of the total agricultural exports of Cameroon in 2012, amounting to approximately 23 billion FCFA, thus indicating the vital importance of the sector to the economy (FAO, 2016). Cocoa serves not only as a source of foreign exchange earning to the economy of Cameroon, but also as an important source of income as well as a way of life (culture) to the rural communities in which it is grown. As mentioned in **section 1.2** above, the performance of the cocoa industry is influenced by both internal and external factors. This study will therefore identify the constraining and promoting factors in order to devise policies and strategies through which the competitiveness of the industry can be promoted. There is also a need for this study, given that no comprehensive study has been carried out yet, to analyse the competitiveness status of the cocoa industry in Cameroon. Identifying the promoting factors of competitiveness of the cocoa industry might serve as an incentive for the government as well as foreign companies to invest in the cocoa industry - not only in the production sector, but also in the processing.

1.8 Delimitations of the study

The aim of this study was to analyze the competitiveness of the cocoa industry in Cameroon. The study focused only on cocoa, although it is cultivated and produced alongside other perennial and food crops like coffee and rubber. The complementary or competitive relationships between these crops were not analysed and the impact of such relationships on competitive performance was not determined.

The study did not attempt to predict the future of the competitiveness of the industry but has suggested strategies, based on historical performance and present day experiences, to improve on the competitiveness of the cocoa industry of Cameroon.

The study also did not include a firm level application of such strategic proposals.

1.9 Study outline

This study consists of six main sections: Chapter 1 will be the introductory section, consisting of the background, problem statements, research questions and hypotheses, importance of the study and the delimitations of the study. Chapter 2 is a review of the literature. In this chapter, the relevant theoretical and empirical literature pertaining to competitiveness will be reviewed, followed by the definition of competitiveness by various authors, the different methods of measuring competitiveness performance and then arguments for value-chain competitiveness in agriculture. Chapter 3 will elucidate on the analytical framework to be used in this study, data and appropriate methodology including the extensions to the conventional framework adopted in the study. Chapter 4 situates the cocoa industry of Cameroon within the global context taking into consideration the historical background, production, exports, marketing and value chain of cocoa. Chapter 5 is the presentation and analysis of results, followed by conclusion and strategic recommendations on how the competitive performance of the cocoa industry in Cameroon can be improved in chap

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the relevant literature pertaining to agricultural competitiveness. It begins by tracing the evolution of competitiveness theory, defining concepts (absolute, comparative, and competitive advantages), in order to establish a suitable definition of competitiveness for the study. The next section will encompass a review of the value chain concept within the domain of competitive analysis of value adding in agriculture with respect to information flow within the value chain and relevant application of competitiveness in different industries, followed by the conclusion.

2.2 Theoretical evolution of competitiveness

The complexity of the concept of competitiveness explains not only the differences in definition and methods of measurement, but also the differences by various schools of thought as to its evolution. This section gives a brief history of how the concept of competitiveness has evolved over time (also see a recent review by Van Rooyen and Boonzaaier, 2016).

The Mercantilists: Krugman (1994) describes the mercantilist as "someone who has no problem with the term 'competitiveness'", and who viewed competitiveness between countries as the same as between companies. To the Mercantilists, competitiveness is a country's ability to export as much as possible and the "winner" is the country with the highest exports (Anca, 2012). This group of people see trade as a global struggle, with the sole aim of generating exports and creating jobs. The mercantilists saw trade as a zero sum game where a country's gain (surplus) is counter-balanced by another's loss (shortage) (Cho & Moon, 2002). To promote international competitiveness of an industry's products and enhance overall economic performance, the mercantilists opted for low wages (Peukert, 2012). According to Krugman (1994), trade liberalisation and tariff reduction by some trade blocks such at the NAFTA and the Uruguay round stemmed from the mercantilist doctrine to promote exports and create more jobs.

The Classicalists: this school of thought has made enormous contributions to international trade theory; notably the contributions of Adam Smith, David Ricardo and John Stuart Mill. To them, imports rather than exports were the main reason why countries engage in trade, contrary to the mercantilists. Exports in this case are considered to be costs, i.e. exports are an indirect way of producing imports, therefore a country should import because it will be more efficient than producing their own imports (exports) (Krugman, 1994. Another difference between this school and the mercantilist is that the mercantilists considered trade to be a zero sum game whereas Adam Smith saw trade to a positive sum game where countries can benefit from each other through specialization (Cho & Moon, 2002). The classicalist's views can summarised as follows:

- The extent of the market determines productivity growth (Adam Smith)
- Only comparative cost determines trade patterns (David Ricardo)
- There exists infant industries whose comparative advantage is hidden (John Stuart Mill)
- Trade restrictions tend to be both inefficient and inequitable (John Stuart Mill) (Masters & Winter-Nelson, 1995).

The classicalists conclude that in conditions of free trade where the prices that foreigners are willing to pay influence domestic production and consumption, there is a possibility that all countries will attain

their highest possible levels of income and economic growth (Masters & Winter-Nelson, 1995). The classical school suggests the following on the concept of competitiveness:

- Every nation plays a role in the division of labour based on comparative advantage
- Trade will be pointless if the level of productivity and technology between trading countries is the same
- If a state is more productive than another in the production of a particular good, it could still experience a fall in this industry under free trade (Anca, 2012).

The Neoclassicals: the classicalists did a good job in pointing out the idea of comparative advantage. They however, did not identify the sources of comparative advantage. Famous among the neoclassical school was the work of Hecksher and Ohlin known as the Hecksher-Ohlin (H-O) model. This model adds another production factor to the Ricardian model, i.e. capital, and assumes constant technology.

P= f (K,L,t)

Where P= production, K= capital, L=labour and t= technology

The model states that countries will differ depending on the factors of production that they possess while the goods they trade in will be determined by the various factors required for their production. Comparative advantage therefore arises from differences in factor endowments (Cho & Moon, 2002). The following models summarise the various sources of comparative advantage:

- Technological efficiency (Ricardo)
- Factor intensity of different industries (Heckscher & Ohlin)
- The use of industry-specific resources (Ricardo-Viner)
- Domestic demand (Samuelson)
- Exchange rates (Salter-Swan) (Masters & Winter-Nelson, 1995).

Other neoclassical theorems, which are an extension of the H-O model, include the factor-price equalization theorem, the Stolper-Samuelson theorem (1948) and the Rybczynski theorem (Cho & Moon, 2000). The neoclassicals have equally been challenged by various scholars; famous among them is the Leontif paradox - opposing the H-O theory and Venon's product life cycle, as well as the wealth through economies of scale theorem of Krugman and Lancaster (1979) (Cho & Moon, 2000). The challenges to traditional trade theories have led to the formulation of various frameworks to assess and measure competitiveness and trade between countries.

2.3 Competitiveness, comparative advantage, competitive advantage

There is a general tendency for the terms competitiveness and comparative advantage to be used interchangeably (Lim, 1997; Warr, 1994; Masters, 1995). An understanding of the two concepts is

crucial in determining the measures that will be used in this study, as well as to determine the level of analysis, i.e. firm or national level. According to Mosoma (2004), a sound understanding of the vital role played by international trade in agriculture and the factors influencing current trade patterns are based on the concepts of comparative advantage and competitiveness. The two concepts are closely related, but different (Warr, 1994), and are both based on the concept of general economic equilibrium (Frohberg & Hartman, 1997).

The principle of comparative advantage is one of the oldest and most important concepts in economicdevelopment, although differential views exist regarding the precise meaning, scope and measurement (Siggel, 2006). There is a unanimous definition of the principle of comparative advantage which is historically tied to the Ricardian theory (1817) (built on the principle of absolute advantage of Adam Smith), where only two goods are assumed to be produced under perfect market conditions. Beyond this assumption (classical trade theory) and methods of measurement of comparative advantage, the concept is subject to different interpretations (Siggel, 2006). The Ricardian theory of comparative advantage is based on the labour theory, which assumes that labour is homogenous (Salvatore, 2002). Distortions created by government policies highlight the difference between comparative advantage and competitiveness. Cost measurements in situations of price distortions reflect competitiveness while measurements under equilibrium prices are comparative advantage (Siggel, 2006). Warr (1994), states that comparative advantage is measured in shadow prices while competitiveness is measured in market prices. Comparative advantage is an indicator of the decision to expand production and trade of a particular commodity, while competitiveness is an indicator of a firm's success in the international market under existing policies and economic structure. Cho and Moon (2000) noted that the advantages of division of labour - be it between individuals, regions or nations - is based on the principle of comparative advantage. Comparative advantage and the benefits enjoyed by domestic firms play an important role in determining an industry's competitiveness (Siggel, 2006).

Todaro (1989) defines comparative advantage as a country's ability to produce a commodity at a lower opportunity cost in terms of the forgone alternative commodities it could produce. According to Du Toit (2009), comparative advantage seeks to explain how countries could benefit from trade if they make efficient use of the world's scarce resources in a free market system. Masters and Winter-Nelson (1995) looks at comparative advantage in terms of income and profits. To him comparative advantage is an activity's marginal contribution to national income (or 'social profits'), and this in turn is useful in evaluating new projects and proposed policy reforms. Comparative advantage measures the economic efficiency with which domestic resources are used to produce commodities (Jooste & Van Schalkwyk, 2001). When measuring production efficiency, it is necessary to carry out a comparison of the cost and benefits of the production activity (Tsakok, 1990).

Porter (1990) identified five forms of competitive advantage any nation, firm or industry may possess, i.e. human resources, physical resources, knowledge resources, capital resources and infrastructural resources. However, Crouch and Richie (1999) note that the factors responsible for a nation's factor endowments change over time, thereby altering the comparative advantage.

Competitiveness over the past two decades has without doubt drawn the attention of economists, researchers and policy makers recently, inter alia due to the importance of "free trade' and the notion of "tradeable products" strategies (Gittinger, 1984). Consequently, there is extensive literature regarding the concept, however, because of the complexity of the concept, there is no unanimously accepted definition of competitiveness (Harrison & Kennedy, 1997; Fertő & Hubbard, 2002; Ma, 2000; Ketels, 2006; Sarker & Ratnasena, 2014). The wide and frequent use of the term competitiveness and the lack of a unanimously accepted definition has resulted in misunderstandings and contradictions among various actors (Reiljan, Hinrikus & Ivanov, 2000). Farole, Reis and Wagle (2010) refer to competitiveness as "vague and seemingly intuitive", giving room for various authors to define the concept according to their own individual perceptions and individual research purpose. Competitiveness can be considered as relative and multi-dimensional with the meaning and implication of the concept constantly changing over time and context. Competitiveness can be assessed from country, industry and firm levels (Ajitabh & Momaya, 2004). Anca (2012) adds that no matter the level of analysis of competitiveness, i.e. product, firm, industry, organisation etc., a close relationship exists between the various levels, for example, the quality of a product determines whether a firm can or cannot survive competition while a firm's performance will determine if an industry or country can compete internationally. Some definitions of competitiveness are more concerned about the underlying sources of competitiveness while others reflect competitiveness indicators (Harrison & Kennedy, 1997). Although the definition of competitiveness is often subjective to the focus of the given study, Krugman (1994) states that competitiveness between countries is most often viewed in the same manner as competitiveness between companies. She argued that it is not necessary to define competitiveness, and that national or regional competitiveness cannot be determined in the same manner as company competitiveness. Krugman (1994) outlined three dangers of competitiveness policy. Firstly, attempts towards improving a nation's competitiveness could result in a waste of money; secondly, competitiveness could trigger protectionism and trade wars; and lastly, competitiveness could result in bad public policy. He therefore warned against the excessive use of the concept, referring to it as a "dangerous obsession." This implies, that an economically rational framework, directing the design, implementation and evaluation of competitiveness, will be important at policy level.

According to Buckley, Pass & Prescott (1988), competitiveness has three dimensions, i.e. potential, process and performance, while Waheeduzzaman and Ryans (1996) see competitiveness as a build-up of many other disciplines such as comparative advantage and/or price competition, strategic and

management, including historical and socio-cultural disciplines. Man, Lau & Chan (2002) state that competitiveness can be a dependent, independent or intermediary variable, depending on what is being investigated. According to Feurer and Chaharbaghi (1994), most definitions only take into account the capabilities of an institution relative to its competitors, neglecting the key stakeholders who influence the business objective through the provision of capital. According to these authors, the definition of competitiveness will depend on the raison *d'être* of an organization and the key players who determine its survival. Despite the varied views on the concept of competitiveness, Man, Lau and Chan (2002) note that the variety of levels and approaches are an indication of the wide application of the concept. Although there is no one generally acceptable definition of competitiveness, some authors have developed definitions, which have come to be accepted.

The UK Department of Trade and Industry (2001) defines competitiveness as the ability to produce the right goods and services of the right quality, at the right price and at the right time. This entails meeting the needs of customers efficiently and more effectively than other firms do. The Organisation for Economic Cooperation and Development (1996) took a wider approach by defining competitiveness as the degree to which a nation can, under free trade and fair market conditions, produce goods and services that meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long-term. This definition emphasises the relationship between exports and standard of living and identifies four indicators of competitiveness, a) labour productivity; b) real wage growth; c) real returns to capital employed in industry; and d) position in world trade. According to Latruffe (2010), competitiveness can be defined as the ability to face competition and to be successful when facing competition. By this definition competitiveness is the ability to sell products that meet demand requirements (price, quality and quantity) while simultaneously guaranteeing profits over time that enable the firm or nation to succeed.

Kitson, Martin and Tyler (2002), on the other hand, define competitiveness as "the sustained ability to profitably gain and maintain market share". Their definition is based on the outcome of the definition provided by Freebairn (1986). From this definition, profitability, which is measured at the sector level by value added and market share can be compared (Cook & Bredahl, 1991). The European Management forum (1984) defines competitiveness as "the immediate and future ability of, and opportunities for, entrepreneurs to design, produce and market goods worldwide, whose price and non-price qualities form a more attractive package than those of domestic and foreign competitors". This definition also brings to light the idea of world market share as a measure of competitiveness and marks the transition from firm level competitiveness to national competitiveness (Buckley, Pass & Prescott, 1988). The idea of market share is also reflected in the definition of Tweeten (1992), who refers to competitiveness as a nation's ability to maintain or gain market share by exploiting competitive advantage in the world

markets through increasing productivity through technological advances or other sources. Sharples (1990) agrees that firms are competitive if they are able to maintain or increase market share.

Reiljan, Hinrikus & Ivanov (2000) took the conflict of interest approach to competitiveness. To them competitiveness is the ability to co-exist with other institutions in the conditions of conflict of interest, i.e. the desire of entities to be more successful than others. Three levels of competitiveness are identified in this case:

- *Ability to survive*- the ability or capacity to adapt passively to the competitive environment without any significant change or development. This marks the lowest level of competitiveness (Reiljan *et al.,* 2000)
- *Ability to develop*- entities are considered to be competitive if they can actively respond to changes in the competitive environment, thus improving their qualities and efficiency. This is considered the medium level of competitiveness (Reiljan *et al.,* 2000)
- *Superiority*- in this case, an entity is considered competitive if it has the ability to influence the competitive environment through operations that are more efficient, faster development or better qualities than other competitors. This is the highest level of competitiveness (Reiljan *et al.,* 2000).

Reiljan, Hinrikus & Ivanov (2000) summarise that competitiveness reflects the position of one economic entity relative to other economic entities, by comparing the qualities or results of economic activities which show a superior or inferior position. Spies (1999) agrees with the third level of competitiveness proposed by Reiljan, stating that "competitiveness implies superior performance in productivity growth -especially in multi-factor productivity, which is best reflected in the effective rate of technological innovation in an economy or in a sector of the economy such as agriculture". Kay (1993) came up with four factors that are believed to determine the competitiveness of a firm namely: *i)* capacity to innovate, *ii)* key internal and external relationships, *iii)* reputation, and i*v)* strategic assets

According to Aiginger (2006), competitiveness is the ability for a nation or location to create welfare, the ability to earn and ability to sell. To him, for a nation to be considered competitive, it must be able to sufficiently sell products and services, gain profits from factors of production which relates to the efforts made by, or similar to its competitors, and ensure that its citizens are satisfied with the prevailing macro-economic conditions. He further goes on to state that a comprehensive application of competitiveness should include investigating the ability of the nation and the level of competitiveness achieved, known as the process and outcome evaluation respectively. The ability of a nation to be competitive (process evaluation) corresponds to an analysis of the production and technological functions, the strengths and weaknesses of the nation and the strategies used by the nation, whereas the

level of competitiveness achieved (evaluation process) closely relates to welfare assessment or the standard of living in the given country (Aiginger, 2006).

According to the World Economic Forum, competitiveness is "the ability of a country or company to proportionately generate more wealth than its competitors in the world market". It is seen as a combination of assets that could be inherited, e.g. natural resources, or created, e.g. infrastructure and processes (transformation of natural resources), while Dunning, Bannerman & Lundan *(*1998) see competitiveness as a way of discussing the relative performance of economies in a bench marking sense. Competitiveness could help identify areas lagging behind but not the reasons for the lag. The Porter Diamond model however contradicts this idea. Porter (1990) came up with a framework to identify factors influencing competitiveness, which have been applied to various cases by various authors and produced significant positive results.
Vilanova, Lozano & Arenas (2009) have grouped the various definitions of competitiveness into five broad categories namely; performance, quality, productivity, innovation and image.

Freebairn (1986), and Sharples and Milham (1990), both define "competitiveness as the ability to deliver goods and services at the time space and form sought by buyers in both the domestic and international market, while earning at least the opportunity cost of resources employed". Three aspects of competition can be identified from this definition, i.e. the international market, domestic market for products, and domestic market for scarce resources. This definition does accommodate most of the other ideas and also has a strong agricultural economics sense (Van Rooyen & Boonzaaier, 2016), as it relates to notions such as opportunity costs, scarcity, intra and inter commodity competition for scarce resources, and international and domestic trade. This definition will thus be adopted in this study (see Step 1, Chapter 3, pp. 50).

This study is concerned with competiveness of a highly tradeable commodity at global level and as such, trade volumes and values are considered and recorded in this study over time. The Cameroon cocoa industry further more operates along the value chain i.e. from the farm level growth and production of cocoa beans to processing into various components and consequently chocolate production i.e. the value chain approach. In this light, in the context of competitiveness of Cameroon cocoa and the availability of data at different value-add levels, the proposed Freebairn definition will frame the analysis at industry level.

2.4 Methods of measuring and analysing competitiveness

Competitiveness, as stated earlier, is a frequently referenced but rather complex concept – this applies to its definition and the measurement thereof. Its popularity can be summarised by the work of Garelli (2006) who stated that a simple search of the word competitiveness gives more that 35million results (Garelli, 2006). Authors such as Krugman (1994) have criticised the excessive use of the concept calling it a "dangerous obsession" while others such as Porter (1990) have emphasised the importance of competitiveness in determining the superior performance of firms, industries and countries as a whole. Neary (2006) pointed out the important contribution made by the Porter Diamond model in designing strategies to monitor competitiveness, e.g. the Global competitiveness index of the World Economic Forum. Competitiveness analysis seeks to provide answers to classical questions of what determines investment, a firm's success and what represents the optimal government policy (Pitts & Lagnevik, 1998). Although much work has been done in the area of competitiveness, just like the confusion regarding its definition, there is no one generally accepted measure of competitiveness. This stems from the concept being applicable at different levels in the economy, i.e. firm, industry and national levels and the variety of proxies used to measure it such as profitability, market share and output costs, amongst others (Kennedy & Harrison, 1997; Banse *et al.*, 1999).

According to Siudek and Zawojska (2014), competitiveness can be measured at three different levels, i.e. the macro level which involves competitiveness at the global, national and regional scales; the meso level which is concerned with competitiveness at the sector and industry level; and the micro level which deals with competitiveness at the firm or business levels. The method and indices of measuring competitiveness will therefore depend on the level of the analysis.

According to Lall (2001), competitiveness indices allow investors to allocate their resources between countries and donors, and make it possible for international institutions to judge economic performance, domestic institutions and industries to judge themselves against competitors, while also making it possible for researches to analyse economic issues in comparative terms. The essence of benchmarking lies in that many aspects of performance can be better assessed with reference to observed best practices rather than theory, because theory does not allow for precise and realistic evaluations and have no clear 'optimum' to which countries can aspire to achieve (Lall, 2001).

2.4.1 Macro level of measurement of competitiveness

Although competitiveness indicators at the macro level are the most popular, they are however considered controversial and less well established in economic theory (Siggel, 2006). The most widely used measures of competitiveness at the macro level are the Institute for Management Development's World Competitiveness Yearbook (WCY) and the World Economic Forum's Global Competitiveness index, published in the Global Competitiveness Report (GCR).

2.4.1.1 Institute for Management Development (IMD): World Competitiveness Yearbook

The Institute for Management Development's (IMD) World Competitiveness Centre (WCC) has pioneered the research on competitiveness of nations and enterprises for over 25 years. Competitiveness here is defined as the ability of nations and enterprises to manage their competencies in order to achieve long-term growth, create jobs, and increase welfare (IMD, 2016). The World Competitiveness Yearbook analyses how nations and enterprises manage the totality of their competencies to achieve increased prosperity (WCC, 2013). According to the IMD, no nation has succeeded in a sustainable way without preserving the prosperity of its people.

With data from private, national and international institutions (2/3 of the ranking) as well as annual executive surveys (1/3 of ranking), i.e. primary combined with secondary data sources, the report is able to rank the performance of 62 countries based on four main competitiveness factors namely; economic performance, government efficiency, business efficiency, and infrastructure. Each of the four main factors is further broken down into five sub-sectors which further comprise of more than 340 different competitiveness criteria (IMD, 2016).

2.4.1.2 World Economic Forum: Global Competitiveness Index

The World Economic Forum defines competitiveness as a set of institutions, policies, and factors that determine the level of productivity of a country. According to this definition, the productivity level of a country sets the pace for achieving economic prosperity. The level of productivity determines returns on investment, which is a key driver of growth (WEF, 2012). For the past three decades, the World Economic Forum's annual Global Competitiveness Reports have studied and benchmarked the many factors supporting national competitiveness. From the start, the aim has been to provide insight into and stimulate discussions among stakeholders on the best strategies and policies to assist nations to overcome the impediments to improving competitiveness (WEF, 2013).

The report provides an understanding of the key determinants of economic growth in an attempt to explain why some nations are able to raise their income levels and provide opportunities for their citizens more than others. Through this, policy makers and business leaders are able to formulate economic policies and reforms that facilitate economic growth and competitiveness (WEF, 2013).

Since 2005, the WEF has based its competitiveness analysis on the Global Competitiveness Index (GCI). The GCI is a comprehensive tool that measures the microeconomic and macroeconomic fundamentals of national competitiveness. The GCI includes a weighted average of many different components each measuring different aspects of competitiveness. These components are grouped into the 12 pillars of competitiveness and include institutions, infrastructure, macroeconomic environment,

higher education and training, goods market efficiency, health and primary education, labour market efficiency, financial market development, technological readiness, market size, business sophistication and innovation (WEF, 2013). Although these pillars are rated individually, they are however not independent and tend to reinforce each other such that a weakness in one area often results in a negative impact in others (WEF, 2013). All the 12 pillars are important for competitiveness but their importance and effects will vary between countries depending on the development stage of the country. These pillars have been grouped into three categories which include basic requirements, efficiency enhancers, and innovation and sophistication factors depicting the various stages of development as illustrated in figure 2.1 below.

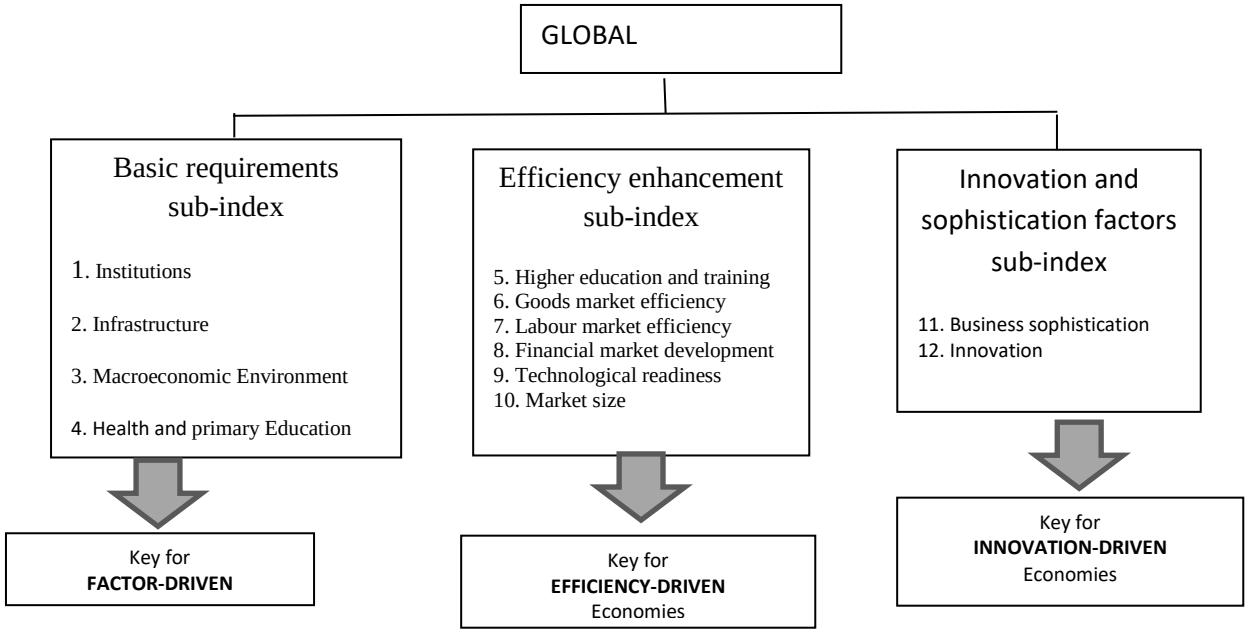

Figure 2.1: The 12 pillars of global competitiveness

Source: WEF (2013)

2.4.2 Micro economic, industry and firm level measurement of competitiveness

The above measures define and measure competitiveness at the national level and aim at increasing the overall prosperity and employment of the country. Kennedy and Harrison (1997) have criticised the national level of competitiveness stating that industries and firms tend to compete with one another rather than nations. Analysing a nation's national competitiveness will therefore require an assessment of the underlying factors influencing the competitiveness of individual industries. According to Siggel (2006), unlike the macroeconomic indicators, microeconomic indicators of competitiveness have a

more solid theoretical base because they are more concerned with the essential characteristics of individual industries and are less controversial. The above macro-economic indices do not pronounce on industry level competitiveness. For the purpose of this thesis, which is concerned with industry analysis, there is therefore the need to examine some measures of industry level competitiveness.

Latruffe (2010) stated that the methods of measuring competitiveness could be made based on two disciplines; the neoclassical, and the strategic management schools. The neoclassicals are advocates of trade measures of competitiveness, which include real exchange rate, comparative advantage indices as well as import and exports indices. The strategic management school on the other hand focuses more on the firm's structure and strategy. According to Buckley, Pass & Prescott (1988), when analysing competitiveness, the level of analysis, time and the unavoidable constraints must be clearly specified because constraints in the short-run could become flexible in the end.

When doing competitiveness analysis, it is important to determine the past and current state of competitiveness of the industry, the factors responsible for the competitive advantage, and how the competitiveness of the industry can be sustained. Frohberg and Hartman (1997) categorised measures of competitiveness into ex-ante and ex-post measures of competitiveness. Some of the methods used in measuring competitiveness include: the revealed comparative advantage (RCA) and derived indicators, real exchange rate (RER), the net export index (NXi), export market share (EMS), foreign direct investment (FDI), Unit labour cost, Grubel-Lloyd measure, and the Porter's competitive model (Porter, 1990), amongst others.

Buckley, Pass & Prescott (1988) have categorised the measures of competitiveness under three main headings: measures of competitive performance, measures of competitive potential, and the management process; otherwise known as the 3Ps. The inputs into an operation are described by the measures of competitive potential. The outcome of the operation is measured by competitive performance and then the management process of the operation. These three categories are said to describe the different levels of competitiveness, i.e. firm, industry and national levels. According to Buckley, Pass & Prescott (1988), from the 3Ps, the concept of competitiveness is not a static concept but an ongoing process.

Some measures of competitive performance include export market share, balance of trade, percentage share of world manufacturing output, percentage share of domestic manufacturing output amongst others. Competitive potential on the other hand can be measured using comparative advantage, cost competitiveness, productivity, price, quality, etc. On the side of the management process, competitiveness can be measured through ownership advantage, marketing aptitude, management relations, economies of scale and scope, commitment to internal business etc (Buckley, Pass & Prescott, 1988). Only the trade based measures and the Porter's model will be discussed in this section.

The above micro measurements of competitiveness focus on the industry level. These measures however differ when doing competitive analysis at the firm level. According to Porter (1998), firms rather than nations compete at the international market and the environmental factors are unique to individual firms. According to Buckley, Pass & Prescott (1998), competitiveness at the firm level can be seen as the firm's long-run performance and its ability to provide superior returns to its employers, as well as compensate its employees. From this definition, competitiveness at the firm level should measure the firm's quantitative costs, prices and profitability as well as qualitative indicators of non-price factors. Note should be taken that such measurements are often time consuming and cumbersome and in some cases, firms are often not willing to share such confidential information such as their profits and cost with third parties. McKee and Sessions-Robinson (1989) provided an alternative measure of firm competitiveness. According to them, a firm's competitiveness can be measured by its level of productivity and the higher the productivity levels of a firm, the more competitive the firm. Below are some methods of measurement of competitiveness at the industry level.

2.4.2.1 Revealed Comparative Advantage (RCA) and derived indicators

To measure how competitive an industry or country is, at industry/sector level, there is a need to determine how successful the industry or country is when compared with others producing the same goods in question. It is also important to analyse an industry's ability to compete with as well as attract and secure scarce resources from other industries. The RCA was initially used by Liesner (1958), but is usually associated with Balassa (1965) for his refinement and popularisation of the index referred to as the 'Balassa index'. According to Hinloopen and Marrewijk (2001), there is an extensive use of the RCA index (by both scholars and policy makers) in determining a country's weak and strong sectors. Balassa (1977) used the index to measure the changing competitiveness of the United States economy in research-intensive industries. The RCA which is based on conventional trade theories (Fertő and Hubbard, 2002), focuses on the pattern of trade of the individual commodity and reveals the relative market costs and differences in non-price competitive factors such as government policies (Mosoma, 2004). The RCA measures export shares relative to exports of the same industry in a group of reference countries (Siggel, 2006). Esterhuizen (2006) stated that due to the difficulties encountered when measuring comparative advantage, Balassa (1965) attempted to determine patterns for trade without taking into consideration productivity, subsidies or prices. The RCA of a country for a particular product is defined as the ratio of the share of that product in world trade. This method compares a country's share of the world market in one commodity relative to its share of all traded goods. Given a group of reference countries, the Balassa index measures normalized export shares, where the normalisation is with respect to the exports of the same industry in the group of reference countries. The RCA therefore identifies areas or sectors where a country has a comparative advantage or disadvantage. If the index or

ratio is greater than one, the country is said to have a comparative advantage in the production of that commodity whereas a value less than one implies a comparative disadvantage.

The RCA index can be written as:

$$\boldsymbol{RCA_{Aj}} = \left(\frac{\boldsymbol{XAj}}{\boldsymbol{XA}}\right) / \left(\frac{\boldsymbol{XArefj}}{\boldsymbol{Xref}}\right)$$

Where X_{Aj} denotes country A's export value of industry j, X_{refj} is industry j's export value for the group of reference countries, and we define $Xi = \sum_j X_{ij}$ for i = A, ref, then country A's Balassa index of revealed comparative advantage for industry j.

Dalum, Laursen & Villumsen (1998) pointed out a weakness in the RCA index, stating that its measure of specialisation is asymmetric and lacks normality because it only considers values between zero and infinity. That is, an RCA value between 0 and 1 indicates countries with a revealed comparative disadvantage whereas those with a comparative advantage will have values between 1 and infinity. To deal with this asymmetry and make the index more of a normal distribution, they introduced the revealed symmetric comparative advantage (RSCA), which is a quasi-logarithmic transformation of the RCA, written as:

$$\boldsymbol{RSCA_{Aj}} = \frac{\boldsymbol{RCAAj - 1}}{\boldsymbol{RCAAj + 1}} \quad \text{----------3}$$

In this case, the RSCA ranges from -1 to 1. Values of RCA greater than one indicate comparative advantage and negative RCA values indicate a comparative disadvantage.

A number of authors have since used this method of measuring competitiveness as a means of determining international trade specialisation (Laursen, 1998). The RCA has equally been used by a number of authors to carry out competitiveness analysis such as (Fertő and Hubbard, 2002; Utkulu & Seymen, 2004; Batra & Khan, 2005; Jackman *et al.*, 2011; Boansi, 2013; Jafta, 2014).

The RCA index is not without criticism. Yeats (1985) criticised the method, saying that it only indicates if a country has comparative advantage at a given point in time and considers the index as neither cardinal nor ordinal. Lafay (1992) also criticised the Balassa Index saying that it neglected the influence of macroeconomic variables by considering only exports. This is problematic because government policies and intervention may distort existing trade patterns leading to a consequent misrepresentation of the underlying comparative advantage (Utkulu & Seymen 2004). Balassa (1965) concurs regarding this with respect to the agricultural sector, which experiences frequent government intervention. According to Pitts and Lagnevik (1998) the RCA does not depend on any existing theory (such as intra-industry trade, the existence of free trade or market competition and the famous factor endowment

theory) and is merely a measure of success or failure which does not reveal if an economy is competitive or not.

In an attempt to expand on the Balassa index, Vollrath (1991) looked at trade as a starting point. In a bid to avoid double counting countries, Vollrath provided an alternative measure of international competitiveness known as the relative trade advantage (RTA). The RCA only considered exports whereas Vollrath introduced an import index, which is a modification of the RCA by substituting imports for exports. The RTA is a trade performance based measure of competitiveness, which attempts to describe a country's share of the world market on one commodity relative to its share of all traded goods taking into account both imports and exports. This measure is superior to the RCA, and indeed takes into account both imports and exports. It is calculated as the difference between relative export advantage (RXA), which equates to the Balassa index, and relative import advantage (RMA).

The RTA index can be expressed as:

$$(1)\quad RTA_{ij} = RXA_{ij} - RMP_{ij} \qquad \text{----------4}$$

$$(2)\quad RXA_{ij} = \left(X_{ij}\Sigma 1, 1 \neq jXi1\right)\left(\Sigma k, k \neq iXkj\ \Sigma k, k \neq i\Sigma 1, 1 \neq jXk1\right)\text{----------5}$$

$$(3)\quad RMA_{ij} = \left(M_{ij}\Sigma 1, 1 \neq jMi1\right)\left(\Sigma k, k \neq iMkj\ \Sigma k, k = i\Sigma 1, 1 \neq jMk1\right)\text{----------6}$$

Where X = exports, M = imports, subscripts *i* and *k* denote the product categories, and *j* and 1 denote the country categories.

The level of these indicators shows the degree of revealed export competitiveness and import penetration. Values of RTA > 0 imply the country has competitive advantage while RTA < 0 indicates that the country has competitive disadvantage and RTA = 0 means that the country is marginally competitive. The higher the value, the more competitive the country is and the lower the value, the less competitive. Bojnec and Fertő (2014) confirmed these boundaries to be consistent with theoretical interpretation and appropriate for comparison of competitiveness between countries. The index takes into consideration both supply and demand. Vollrath (1991) developed another index known as the revealed competitiveness, which is the logarithmic of the RTA

RC = ln RXA – ln RMA----------7

From the above indices, it is evident that both authors, Balassa (1997) and Vollrath (1991), see trade performance as an indicator of competitiveness. This method therefore determines the "revealed" comparative advantage, which reflects competitive performance and competitiveness under real world conditions such as "distorted economies, uneven playing fields and different trade regimes" and can be used to measure competitiveness over a long duration, thereby establishing a trend of the industry's

performance (Esterhuizen & Van Rooyen, 2006). According to Pitts *et al.* (1995), it is important that the RTA considers both imports and exports because if only either of them were considered, countries acting as transit countries may have high RTA values indicating high level of competitiveness, which may not be true in the real world situation.

Many researchers who have carried out competitiveness analyses have used this method (Van Rooyen, 1998; Van Rooyen et al., 2000; Valentine & Krasnik, 2000; Pitts & Lagnevik, 1997; Fertő & Hubbard, 2001; Esterhuizen, 2006; Esterhuizen, Van Rooyen & Stroebel, 2011; Asanda, 2014; Boonzaiaer, 2015; Angala, 2015).

2.4.2.2 Net Export Index (NXi)

There have been a wide range of criticisms of the RCA index as a method of measuring competitiveness because it only takes into account exports. Vollrath (1991) indicated that with differentiated products, intra-industry trade, and flows of exports and imports, it is necessary that the net trade effects be considered. This led Ballassa to propose another method of measuring competitiveness known as the Net Export Index (NXi). Net exports refer to the difference between exports and imports. In order to calculate the index, net exports are divided by the total value of the trade (exports plus imports) of the commodity in question. Traill and Gomes da Silva (1996) proposed that another way to calculate the "Net Export Index" is to divide the numerator (Xi – Mi) by domestic production (Yi), instead of total trade.

The NXi index formula is expressed mathematically as:

$$\boldsymbol{NX_i = \left[\frac{X_I - M_I}{X_I + M_i}\right] x\ 100} \text{ ----------8}$$

Where X*i* is exports and M*i* is imports. An index higher than 100 indicates that there are no imports, and that with a lower limit of negative 100 indicates that there are no exports.

The main problem with the Net Export Index (NXi) is that it does consider the overall level of trade in a particular commodity (Galetto, 2003). This means that countries with small exportable surplus and no imports and which are relatively self-sufficient will have an index of 100 making them competitive even though they hardly engaged in trade. This is the reason why Galetto (2003) proposed that both the RCA and NXi be used together in assessing and analysing the comparative advantage and competitiveness of a specific industry or commodity

2.4.2.3 Porter Diamond model

The methods described above are only the starting point in any comprehensive analysis of competitiveness as it measure without explaining values and trends in performance. These methods help to define, through measurements, which sectors are competitive and which are not. Competitive advantage can be regarded as a canopy term describing a range of frameworks that evaluate local economies on the basis of their potential to create sources of advantage for its firms such as low cost, high innovation or differentiation. Several frameworks have been developed; the most popular of which is one developed by management theorist Michael Porter.

Porter (1990, 1998) observes that the 18th century work of Adam Smith and David Ricardo on factor comparative advantage cannot provide explanations for most of the trade that takes place today. The Porter's model seeks to answer this question.

"When is an industry internationally competitive?" and "why does a nation achieve international success in a particular industry while others fail?" are questions often asked by researchers and scholars. To answer these questions Porter (1990) carried out a four-year study on ten different countries and the conclusion is what is known as the Porter diamond model. According to this model, nations succeed in particular industries more than others as a result of their domestic environment being the most dynamic, forward-looking and challenging (Cho & Moon, 2000). The model is based on four country specific attributes and two external attributes (Rugman & D'cruz, 1993). The attributes provide a platform through which a nation's competitive advantage can be determined, created and promoted. The four main determinants of competitiveness of an industry include factor conditions, demand conditions, related and supporting industries and firm strategy, structure and rivalry. The other two exogenous determinants are chance and the role of government. These determinants are considered exogenous because they only support or complement the other four factors but cannot create lasting competitive advantage but are important in shaping the direction of the influence (Smit, 2010). The attributes are self-reinforcing where the effect of one attribute or determinant often depends on the state of the others. These determinants interact and make up a system "diamond" that differs from place to place thus explaining why some firms (or industries) are able to succeed in a particular location than do others. The interaction or interdependence of the determinants and factors is such that weaknesses in any one (|Porter, 1990). Note should be taken that the interrelationship between these determinants and factors will be tested within the Cameroonian cocoa industry to determine if the industry is consistent with the views of Porter.

Porter argued that a nation could not rely on only one factor (e.g. cheap labour) because it might become unsustainable over time due to other nations providing even cheaper labour. Adeboye (1996) calls

dependence on cheap factors the low road to competitiveness, which according to Porter is the most travelled road. However, the abundance of a factor leads to its inefficient deployment. Porter groups this factors into what he calls a "diamond" and this diamond is seen to be the source of competitiveness of domestic firms. A firm's competitiveness in the international market will depend on achieving sustainable competitiveness in the domestic market, which is determined by the attributes in the diamond (Rugman & D'cruz, 1993).

According to Esterhuizen (2006), the work of Porter (1990, 1998) has made two important contributions, namely its contribution to strategic thinking about industries and competitive analysis, and contribution about the competitiveness of nations. The Porter approach analysed clusters of industries in which how competitive a company does not only relate to its performance but the performance of other companies and other actors tied together for example in value-added chains, customer-client relations, or in local or regional contexts (Esterhuizen, 2006). Porter also allowed for the measurement of such factors in order to rate performances as a component of the analysis (Esterhuizen, 2006; Van Rooyen, Esterhuizen & Stroebel, 2011; Jafta, 2014; Boonzaaier, 2015; Angala, 2015; Van Rooyen & Boonzaaier, 2016). The four key elements of the diamond as well as the exogenous attributes are outlined below.

Factor condition: Traditional trade theories state that trade flow between or within countries is strongly influenced by factors of production such as land, labour, capital and skill. Porter's main contribution was to analyse the characteristics of the factors of production; how they are created and how they are related to a firm's competitiveness (Grant, 1991). Porter grouped these factors of production into physical resources, human resources, capital resources, knowledge resources and infrastructure. These factors of production can be inherited (basic factors); climate, unskilled labour or created (advanced factors), skilled labour, or they can be generalised or specialised; infrastructure. Competitiveness based on basic or generalised factors is unsophisticated and short lived because it can be achieved by any industry, so for an industry to achieve sustained competitiveness it has to possess more specialised or advanced factors which are not easily duplicated and require sustained investment to create. The presence of factor-creating mechanisms such as high educational institutions in the public and private sectors will ensure the availability of specialised for advanced factors (Jin & Moon, 2006). The relationship between basic and advanced factors is that basic factors provide initial competitive advantage while advanced factors extend and reinforce this competitive advantage (Grant, 1991). With reference to, this attribute Porter (1990; 1998) concludes that a nation's prosperity is created not inherited. The competitiveness of a country will not depend on its natural factor endowments but its ability to innovate and upgrade.

Demand conditions: After having created the advanced factors necessary to achieve competitive advantage in a country, an understanding of the prevailing domestic conditions necessary to sustain these investments is vital. According to Porter (1990), contrary to the belief that globalisation of competitiveness will reduce the importance domestic demand, it has been seen to provide an incentive for upgrading competitive advantage. Countries gain competitive advantage in industries where the domestic demand gives them a clear picture of prevailing buying or demand trends and where demanding buyers exert a certain pressure on their domestic producers to innovate and upgrade quality (Grant, 1991). For domestic demand to significantly influence competitive advantage the home segment of the industry must be larger and more visible than that in the foreign markets. Porter recognizes both the size of the market and sophistication as two important factors in achieving competitive advantage but emphasises the importance of sophisticated and demanding domestic buyers as more important, citing as examples the Japanese camera and the German car manufacturing industries. He also notes that domestic demand can equally help industries gain competitive advantage if their demands anticipate or even shapes those of other countries.

Related and supporting industries: The existence of local supplier and related industries that are internationally competitive also influences the competitive advantage of a nation. This requires that the suppliers of inputs, knowledge institutions, firms in related fields and end users be placed in clusters and located at close proximity. When investments are made in such industries, there are bound to be spill-over benefits that go beyond that particular industry. The presence of these industries provide benefits such as upgrading, innovation, shared technological development and information flow which create competitive advantage for downstream industries. For example, if suppliers and end users are located close to each other they can benefit from short channels of communication, ongoing exchange of ideas and innovation and quick and constant flow of information. The success and competitiveness of a nation is likely to be possible if the country has a competitive advantage in a number of related industries. Porter makes reference to the Italian ski boot industry and its close relationship with the leather industry as an example of competitiveness due to supporting and related industries.

Firm strategy, structure and rivalry: This is the fourth and last major attribute of the model and refers to the condition in the nation that governs the creation, organisation and management of companies as well as the nature of domestic rivalry. Porter asserts that no one managerial system is universally appropriate and that different countries have different business characteristics which determine the pattern of competitive advantage of a given industry within a nation. These business characteristics include strategies, goals, structures, individual attitudes, intensity of rivalry within the business sector and managerial practices (Grant, 1991). According to him, countries succeed in industries where managerial and organisational practices preferred by the country suit the industries' sources of competitive advantage. He referred to small family-owned companies in Italy and engineering

industries in Germany, which succeed using different managerial practices. Porter identifies the relationship between domestic rivalry and the creation and persistence of competitiveness as the most interesting relationship among the others because it has a powerful effect and promotes improvement in all the other determinants. He identified geographical concentration as an important factor that increases the power of domestic rivalry. To him the more localized the rivalry the more intense the competition. In addition, domestic rivalry also creates pressure to constantly upgrade the sources of competitive advantage. Competition between domestic firms is often sensitive and personal and because their competition is based on a national platform, rivalry between them tends to be stronger than with foreign competitors. In his words, Porter describes this as "local rivalries go beyond competition - they become intensive personal feuds for bragging rights." He cites the Japanese automobile and camera industries as examples.

The above four attributes operate interdependently to determine a nation's competitive advantage and are self-enforcing, constituting a system in such a way that the effect of one of these attributes often depends on the state of the others. Porter states that a nation is rarely home to one competitive industry but the diamond promotes industry clusters. The two other external attributes; chance and the role of government will be explained below.

The role of government: According to Porter, the role of government in influencing competitiveness of a nation has prompted more arguments than any other factor. While a group of people see the role of government as vital in providing support for industries, implementing strategies that directly or indirectly influence competitive performance of industries, others are advocates of the free market system which is controlled by the "invisible hand" (Porter, 1990). Porter disagrees with the above views stating that the government acts as a catalyst or challenger that tries to encourage or push companies to raise their aspirations and achieve higher levels of competitiveness though the process involved may be unpleasant and difficult. The government through its policies can influence the above four attributes either positively or negatively. The policies which succeed are those that create an enabling environment for companies to gain competitive advantage rather than those that are directly involved in the process of creation; except for countries in the early stages of development, i.e. it plays an indirect rather than direct role (Ortmann, 2000). Some government policies that influence competitive advantage include taxation and subsidies, educational policies, product and antitrust regulations, etc.

The role of chance: This refers to occurrences that have little or nothing to do with the prevailing circumstances in a nation and are often outside the power of firms - and often the national government - to influence. Examples of such occurrences are new inventions, wars, political decisions by foreign governments, changes in global financial markets and exchange rates, climate, disease, surges in world demand and major breakthroughs in technology (Hodgetts, 1993). A nation's competitive position can

be positively or negatively affected by these occurrences. In other words, they can cancel out or create sources of competitive advantage. Porter (1998) states that the nation with the most favourable "diamond" will likely convert chance events into competitive advantage. Stated differently; the ability for an industry to respond to chance events will depend on the state of the other attributes.

Figure 2.1 represents the diamond model. As earlier mentioned the four main attributes are interrelated and the external variables the role of government and chance affect either one or all of them.

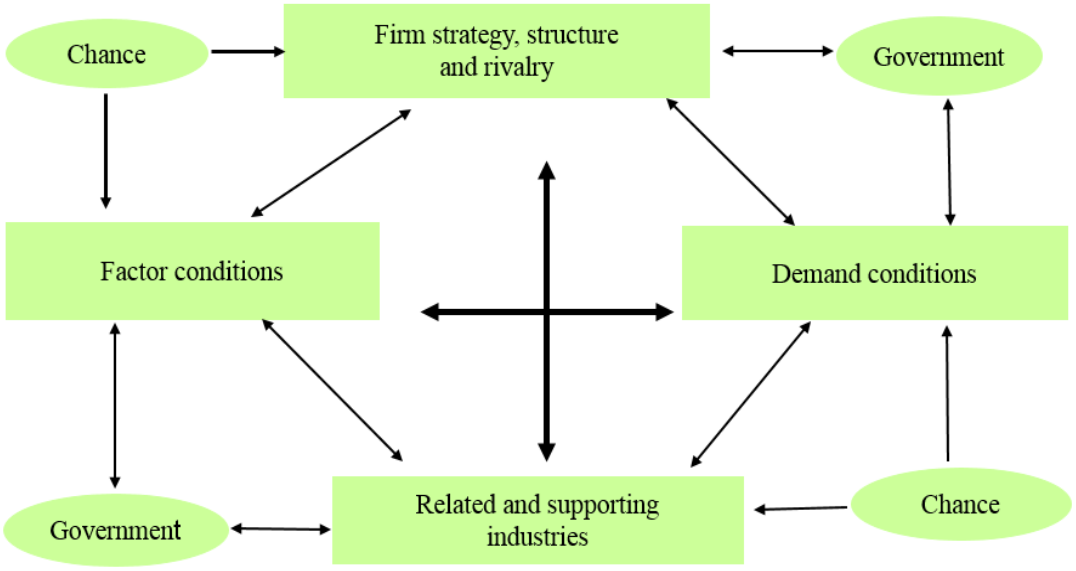

Figure 2.2. Porter diamond model

Source: Porter (1990)

The Porter diamond model has been used by many authors in describing the factors that determine the competitive success of an industry (Van Rooyen, 1998; Venter, 1999; Mashabela, 2007; Esterhuizen, Van Rooyen & D'Haese, 2001; Esterhuizen, 2006; Van Rooyen, Esterhuizen & Stroebel, 2011; Jafta 2014; Boonzaaier, 2015; Angala, 2015). The International Institute for Management Development (IMD) has also used the Porter's framework for the World Competitiveness Report. Porter's model therefore will be considered in this study to identify the determinants and factors influencing the competitiveness of the Cameroonian cocoa industry.

Although the Porter diamond model is well renowned in the field of competitiveness, it is not without weaknesses. These shortcomings have prompted the extension of the model by some scholars notably the double diamond model of Rugman and D'Cruz (1993) and the generalised double diamond framework of Moon, Rugman & Verbeke (1995). In this study the relationships between the Porter determinants and their respective factors will statistically be examined (in step 4), to determine to what

extent they are independent or related in the Cameroon cocoa industry case. This will be relevant to execute step 5 – industry strategy development appropriately.

2.5 Previous studies on agricultural competitiveness

The concept of competitiveness has drawn a lot of attention and interest in recent years as shown by the vast number of studies that have been carried out on the concept in different parts of the world and in different sectors of the economy. Table 2.1 shows some of the studies that have been carried out in this field in the agricultural sector and their various findings. The methods and frameworks employed in these studies serve as a justification for the method of measuring competitiveness that will be applied in measuring the competitive performance of the cocoa industry of Cameroon. Note should be taken that the conclusions reached are unique to individual studies and cannot be generalised.

competitive advantage could be indicated by the trade performance of a particular traded commodity and its value chains, competing with other competing commodities and countries. This implies that the commodity's trade pattern reflects relative market costs as well as differences in non-price competitive factors,

Table 2.1: Selected agricultural competitiveness studies

Recent international agricultural competitiveness studies	Authors	Proxies for measurements and frameworks applied	Findings and conclusions
RSA food commodity chain	Esterhuizen & Van Rooyen (1999)	RTA and Porter diamond model	16 selected food commodity chains. Majority of chains are marginally competitive, except for the maize, pineapple and apple chains. Index decreases when moving from primary to processed products.
European Agro Food system	ISMEA (1999)	RTA and Porter diamond model	Trade performance of particular commodities and value chains determine competitiveness.
RSA agricultural input industries	Esterhuizen, Van Rooyen & Van Zyl (2001)	RTA Trade related comparisons	RSA manufacturing of farming requisites is relatively marginally competitive. Competitiveness of machinery industry is improving. Fertiliser industry is becoming more competitive. Pesticide industry is decreasing in its competitiveness.
Hungarian agricultural food sectors	Fertő & Hubbard (2002	RCA and RTA	Hungary has a comparative advantage for 11 of the 22 aggregated product groups.

Namibian table grape production	Thomas (2007)	Porter diamond model	The Namibian table grape chain is relatively competitive in the international arena. Primary production is becoming more competitive.
RSA deciduous fruit supply chains	Mashabela & Vink (2008)	RTA trade related comparisons	RSA enjoys a relative global competitive advantage. Increased competitiveness further up the chain.
Livestock product exports from India	Kumar (2010)	Export and import analysis – nominal protection coefficient (NPC)	India is competitive in the export of meat products, except poultry.
RSA wine industry	Van Rooyen, Esterhuizen & Stroebel (2011)	RTA and Porter diamond framework	RSA wines are increasingly internationally competitive, with a positive trend since 1990s.
China's agricultural products	Qiang, Yong-Sheng and Xiao-Yuan (2011)	RCA and trade coefficient specialisation (TCS)	Ability of direct factors is strong in terms of transformation from cost advantage and price advantage into competition advantage.
Global Pear Market	De Pablo Valenciano, Giancinti and Uribe (2012)	RCA	Geography plays a main role in competitiveness with nearby markets, as happens in markets with free trade.
Poultry production in the Czech Republic	Belová et al. (2012)	Trade-related comparisons – Lafay Index (LFI)	The comparative disadvantage deepens in relation to European Union countries.
RSA agribusiness sector	Esterhuizen & van Rooyen (2012)	RTA and Porter diamond framework	The sector is marginally competitive, but constrained by an increasingly negative trend since 2004.
Ghana Cocoa exports	Boansi (2013)	RCA and RSCA	Ghana enjoys competitive advantage but competitiveness is higher in cocoa beans than processed cocoa.
RSA apple industry	Jafta (2014)	RTA and Porter diamond framework	RSA apple industry is marginally competitive in the international market.
Malawi and Mozambique tomato value chain	Mango et al. (2015)	VCA cost composition and efficiency	Malawi has a slightly higher competitive advantage in tomato production than Mozambique due mainly to slightly higher productivity and labour and irrigation cost advantage.
RSA stone fruit industry	Boonzaaier (2015)	RTA, WEF and Porter diamond framework	RSA stone fruit industry is competitive in the international market.
Namibian date industry	Angala (2015)	RTA and Porter diamond framework	Namibian date fruit industry has experienced positive competitiveness since 2001

Source: Own research

2.6 Value chains and value adding in agriculture

Trade liberalisation and rising globalisation over the last decades have paved the way for the entry of new actors into the global market and industries have therefore designed strategies to be more competitive (Zereyesus, 2003:14). Through globalisation nations have become increasingly interdependent through trade and foreign direct investment (FDI) forming a global value chain (Gereffi, Humphrye and Kaplinsky,2001). The global value chain provides a production system through which various actors (firms, workers and consumers) around the world are linked together creating an environment where (developing) countries, firms, workers and consumers can integrate into the global economy (Gereffi & Fernandez-Stark, 2011). A value chain orientation linked to an industry/firm focus therefore remains important in today's global economy and will strongly enhance competitive performance.

In a bid to expand the agricultural sector through the development of agro-industries, the importance of having effective value adding through efficient value chains have been stressed. (Van Rooyen, Esterhuizen & Botha, 2009; IFAMA 2014; Da Silva, Magapile & Van Rooyen, 2016). Through innovative value adding, value chains are able to increase and maintain competitiveness (African Development Bank [ADB], 2012). There has thus been an increasing interest in value chain analysis and the concept has been applied to a number of industries such as the agricultural, garment and electronics industries (Gereffi, Humphrye and Kaplinsky; Webber and Labaste, 2007; Van Rooyen, 2014). The value chain analysis concept has been used to formulate and implement competitiveness strategies (World Bank, 2007; Webber & Labaste, 2010).

According to Kaplinsky, Morris & Readman (2002) value chain refers to the full range of value-adding activities required to bring a product from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), to the delivery of final consumers and final disposal after use. Their approach tries to understand how activities are performed along the chain and how the value is created and shared among chain members. This definition points out the importance of information flow in achieving value chain competitiveness. Information sharing is an important factor enabling cooperation within an integrated value chain. According to Chibba and Rundquist (2004), in a bid to gain advantage in a competitive market, most organisations have for a long time optimized and improved physical material flow within the value chain. They however argue that improving the material flow in a value chain is not sufficient to gain competitive advantage but rather the improvement of the information flow linked to the physical material flow will enable an organisation to gain advantage. The concept of information flow links the functions of business logistics and information management focusing on vertical coordination within firms and horizontal coordination within and beyond a firm (Klein, 1993). According to Prajogo & Olhager (2012), achieving real-time transmission and processing information required for decision

making along the chain is one of the main purposes of information integration or sharing. This flow of information along the chain could lead to reduced inventories and shortages consequently lower operating costs (Lim *et al.*, 2009).

The principal reason for introducing value-chain analysis into this study is due to the importance of value adding, from a competitive perspective, of information flows and value-adding processes for a coordinated approach between different functions based on market preferences and the necessary smoothing of processes as captured by the Porter Diamond (Webber and Labaste, 2007). In order to do such an analysis the study will measure the RTAs of different value-adding activities in a value chain; enquire about the differences or consensus of views on competitiveness between different players in the chain; and to accommodate such differences and consensuses in strategic proposals to enhance competitiveness of the industry.

2.7 Conclusion

The aim of this chapter was to consider the theoretical base and objectives of the study and provide the review of the relevant literature. This chapter outlined the relevant theoretical foundation and evolution of the concept of competitiveness and there after provided some of the definitions of competitiveness by various authors. The definition of Freebairn (1986), which states that competitiveness is the ability of an industry or firm to trade products in both domestic and international markets on a sustainable basis while earning at least the opportunity costs of returns on resources employed and as such it is able to attract scarce resources such as land, human capital and labour and capital from other economic activities, was used.

Techniques of measuring competitiveness were reviewed in the subsequent section, i.e. techniques to measure competitiveness at the macro and micro levels. The Institute for Management and Development's (IMD) world competitiveness yearbook and the World Economic Forum's Global competitiveness index represent measurements of competitiveness at the macro level. At the level of industry-based competitiveness, trade-based techniques to measure competitiveness, such as the RTA and RCA measures and the Porter Diamond framework, were reviewed and their strengths and weaknesses outlined. Some previous studies on competitiveness in the agricultural sector were also referenced. Given that the study was concerned with the cocoa industry, including a range of value-added activities from primary cocoa production to finished products like chocolate, a review of the value chain and appropriate value adding analysis were also attended to. The next chapter will provide an analytical framework and methodologies to be used in the study.

CHAPTER THREE: ANALYTICAL FRAMEWORK AND METHODOLOGY

3.1 Introduction

The study aims to measure and analyse the competitive performance of the Cameroon cocoa industry and seeks to identify the key factors and determinants in this process. This chapter builds on the literature survey and definition of competitiveness (chapter 2) and gives a description of the framework of analysis and database that will be applied in this study.

3.2 Analysing competitive performance

The study will make use of a step-wise analytical framework, where each step informs subsequent steps to reach logical and well-argued conclusions, adapted from a number of recent studies (Van Rooyen, Esterhuizen & Stroebel, 2011; Jafta, 2014; Boonzaaier, 2015; Angala, 2015). In analysing the competitiveness status of the South African agribusiness industry, Esterhuizen (2006), in his PhD study, outlined three important aspects when assessing an industry's competitiveness status. Firstly, it is crucial to establish a trend of the past and present competiveness status of the industry. Secondly, after having established this trend, it is vital to identify and understand the various success and constraining factors of competitiveness advantage and then, thirdly, establishing measures through which the industry or sector's competitiveness status can be sustained. The above three aspects will guide the formulation of a five-step process, employed to analyse competitiveness in this study.

These steps, logically include defining competitiveness with reference to the industry under investigation (in this case the cocoa industry of Cameroon); measuring the competitiveness trend of the industry using appropriate techniques. The third step consists of identifying the factors that influence the competitiveness of the industry; grouping these factors under the six major determinants of competitiveness with reference to the Porter Diamond Model (step four); and to propose measures through which the competitiveness of the industry can be enhanced (step five).

3.2.1 Defining competitiveness (Step 1)

Based on the literature review in chapter two, this study defined competitiveness "as the ability (of the Cameroon cocoa industry) to deliver goods and services at the time, space and form sought by buyers in both the domestic and international market while earning at least the opportunity cost of resources employed", i.e. a globally traded product (Freebairn, 1986). Refer to chapter two pp 30-31.

3.2.2 Measuring competitive performance trends of the Cameroonian cocoa industry (Step 2)

After having defined competitiveness in a manner appropriate to the study the next step is to identify specific tools and data sets for the measurement of competitiveness with reference to the Cameroonian

cocoa industry. As mentioned in the previous chapter there are many ways of measuring competitiveness depending on what aspect of competitiveness and level of analysis is under investigation. Various methods of measuring competitiveness exist; some of which were discussed in chapter two. This study made use of the relative trade advantage (RTA) of Vollralth (1991). The RTA is an extension of the revealed comparative advantage of Balassa (1965) otherwise known as the Balassa index, but includes both exports and imports; a true reflection of global trade dynamics. The RTA is thus a suitable measure of competitiveness because it considers trade as a whole - imports and exports, which are indicative of all relative market advantages, enhancements, constraints, market costs as well as differences in non-price competitive factors, such as government policies (Esterhuizen & Van Rooyen, 2006; Boonzaaier, 2015). For a detailed explanation on the RTA index and how it is measured, refer to section 2.4.2.1.

To measure the competitiveness of the cocoa industry of Cameroon, data was sourced from the FAO and ITC databases. These databases record trade date over time, i.e. just what is required to apply the measurements as described above - and refer to 3.3 for more detail.

3.2.3 Identifying the major factors of the competitive performance of the Cameroonian cocoa industry (Step 3)

The identification of a suitable method of determining the competitiveness of the cocoa industry of Cameroon paves the way for the researcher, in collaboration with key industry players, to be able to identify and do an in-depth analysis of the major determinants that enhance and constrain the competitiveness of the industry. The identification of these determinants, as a primary data source, was done through the gathering of qualitative information through personal surveys of leaders and executives in the Cameroon cacao industry -the Cocoa Executive Survey (CES), backed-up with telephonic discussions with various experts in the industry who are involved in strategic decision-making. The step aims to identify the determinants that influence the competitiveness trend of the cocoa industry. Executives and industry leaders were requested to identify such factors and to rate them on a Likert scale ranging from most constraining (zero) to most enhancing (five).

3.2.4 Grouping factors into the major Porter Diamond determinants of competitiveness (Step 4)

Step 1, 2 and 3 of the framework pave the way to the fourth step, which involves clustering the factors within the major determinants that promote and constrain the competitiveness of the cocoa industry of Cameroon within the Porter Diamond model framework.

This step involves categorizing the factors that affect competitiveness identified by the stakeholders through the application of the Porter model. Porter's theory of competitive advantage aims at identifying and categorizing the factors that affect the competitiveness of an industry (refer to chapter two section

2.4.2.3). This methodology was applied to the data from the CES to determine the factors that enhance and constrain the competitiveness of the Cameroonian cocoa industry. The Porter framework groups the competitiveness factors under six of the major determinants, namely production factors; demand and market conditions, related and supporting industries, firm structure, strategy and rivalry, government support and policy and chance factors. The results will be presented using radar plots compiled using Microsoft Excel.

3.2.5 Proposing industry level strategies (Step 5)

This step draws from the findings of the first four steps of the analysis. From the results of the analysis of the competitiveness status of the Cameroonian cocoa industry and the corresponding constraining and promoting factors, strategic recommendations can be made to the various stakeholders of the industry on measures that can be undertaken to deal with the constraining factors as well as how to sustain the promoting factors in order to improve and sustain the competitiveness of the industry.

3.2.6 Extending the analysis

In this study the "conventional" analytical approach, as applied in recent studies (Esterhuizen & Van Rooyen, 2006; Esterhuizen, 2006; Van Rooyen, Esterhuizen & Stroebel, 2011; Van Rooyen & Esterhuizen, 2012; Jafta, 2014; Boonzaaier, 2015; Angala, 2015), is extended by incorporating two 'new' analytical processes, namely value-chain analysis, and considering the relationships between the various Porter Diamond determinants for the Cameroon cocoa industry. This will allow a more comprehensive view to determine industry strategy.

Value-chain analysis: Firstly, this study adopted a value chain approach to competitiveness, i.e. it did not focus solely on one production sector or the industry as a whole. It extended the analysis to cover some major value-added activities for the measurement of competitive performance; this together with opinion assessments of two major cluster groupings in the value chain, namely the agribusiness sector, which involve the primary production and related support functions along with the second cluster incorporating the manufacturing and trade sectors which deals with the " downstream" transformation of the product from the raw material form (cocoa beans) through the various phases of processing intermediate products (cocoa butter, paste, etc.) up to the final stage of consumption of the goods (chocolate), i.e. the relevant value adding activities. RTA measurements of each of these value-adding processes will be computed to determine a view on competitiveness along the value chain.

Cluster analysis was carried out to determine how the factors of competitiveness, in the CES, affect the identified clusters; Cluster 1: the agribusiness group - primary producers and the supporting agribusiness, and Cluster 2: the processors and traders- those involved with the transformation of cocoa beans into post-processed products and consequently chocolate.

In this study, using the Least Significant Different (LSD) test, an enquiry will be made to analyse whether the determinants of the Porter Diamond model are interrelated or independent within the context of the Cameroonian cocoa industry of Cameroon. If they are interrelated, they need to be dealt with as such in strategy and planning processes. This test involves carrying out statistical analysis involving p-values. Determinants or factors with a p-value lower than 0.05 indicate interdependence or interrelationship between them whereas those with a p-value above 0.05 show a strong level of independence.

Figure 3.1 illustrates the analytical framework – each step and appropriate analysis methods, employed in the study.

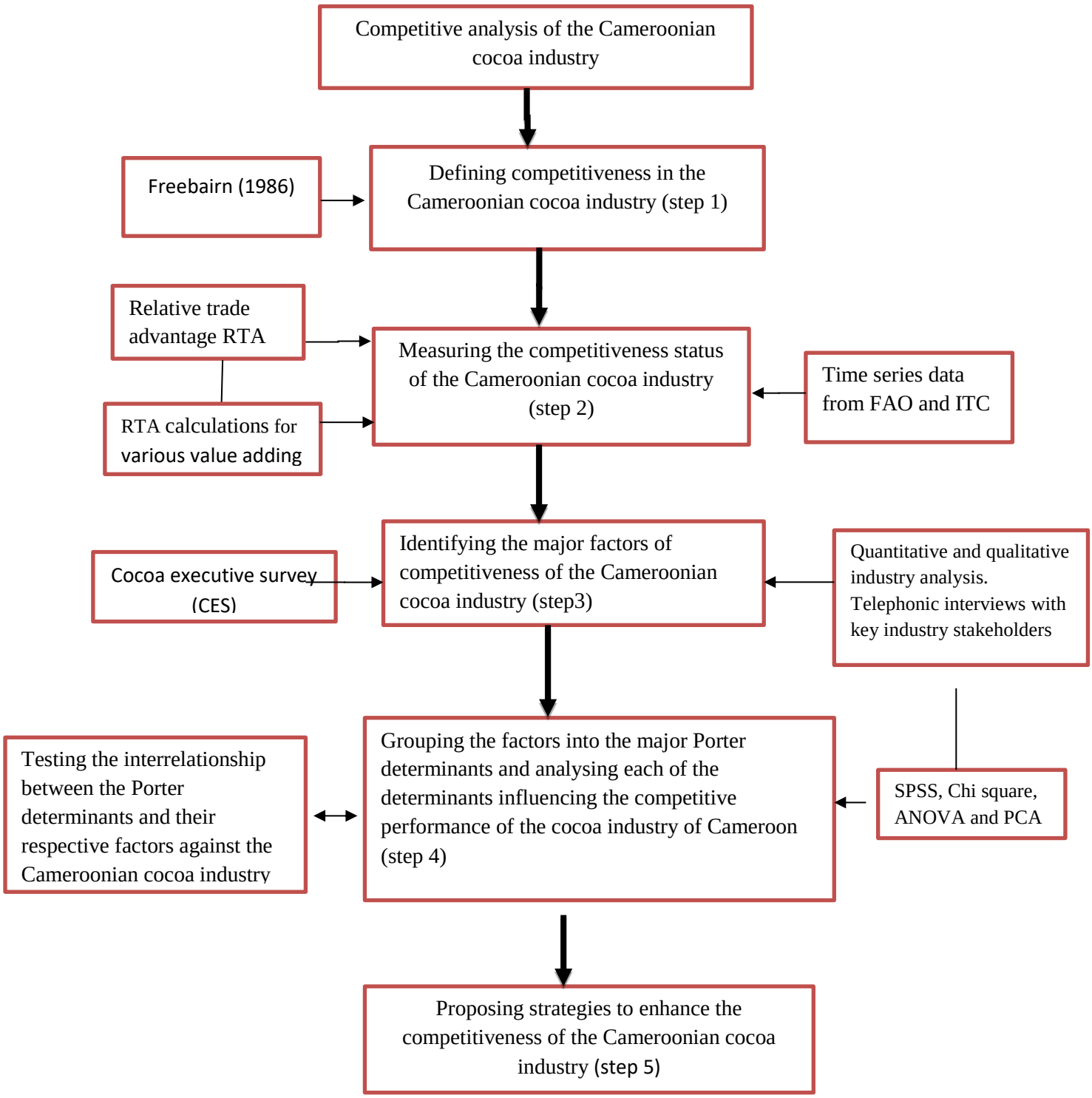

Figure 3.3: Framework of analysis for the competitiveness of the Cameroonian cocoa industry

Source: Adapted from Esterhuizen, (2006); Van Rooyen, Esterhuizen & Stroebel, (2011); Van Rooyen & Esterhuizen, (2012); Jafta, (2014); Boonzaaier, (2015) and Angala, (2015).

3.3 Data

This study made use of both primary and secondary data.

Primary data: The primary data for the identification of the factors affecting the competitiveness of the industry was obtained through the use of questionnaires during the CES supported by personal interviews with key industry stakeholders, executives and experts. Sixty-five usable responses from a sample size of 150 were used for the analysis (see Appendix B for detailed questionnaire). Key industry stakeholders – producers, consultants, exporters, processors and service providers and advisors participated in the survey.

Due to the large number of stakeholders involved in the cocoa industry particularly the farmers, sending questionnaires to all these actors was an almost impossible task. The questionnaire was formulated based on Porter's five determinants of competitiveness (i.e. production factor conditions, demand and market conditions, related and supporting industries, firm's strategy and structure, government support and policy and the chance factors) and adapted for the study. The questions were structured as both open-ended and closed-ended questions. The closed-ended questions allowed for participants to rate their perceptions based on a scale of 1 to 5 where 1 indicated a negative impact and 5 a strong positive impact on competitiveness. This type of rating is known as the Likert-type scale (Likert, 1932). This scale is advantageous in that it is less time consuming, easily adaptable and provides direct and reliable assessments of attitudes though it may sometimes be difficult to construct and respondents may sometimes be biased. Some open-ended questions were included in the questionnaire to make provision for some of these shortcomings. Due to the low-level of technology of the country, inaccessibility and the little use of emails, the questionnaires had to be printed and distributed to various actors in person. In addition, expert opinions were also obtained through telephonic interviews.

A pilot study was used to validate the questionnaire before the survey was fully carried out. Most of the questions in the questionnaire were reflective type of questions while a few were formative. The difference between the reflective and formative measurements is that reflective measures have high inter correlation while formative measures are not expected to correlate (Kidd, 2016). Also reflective indicators can be seen as a function of the latent variable, i.e. what is being measured, where changes in the latent variable determine changes in the observable indicator whereas in formative cases, changes in the indicators or responses determine changes in the latent variable (Kidd, 2016).

Figure 3.2 illustrates the formative and reflective models of measurement.

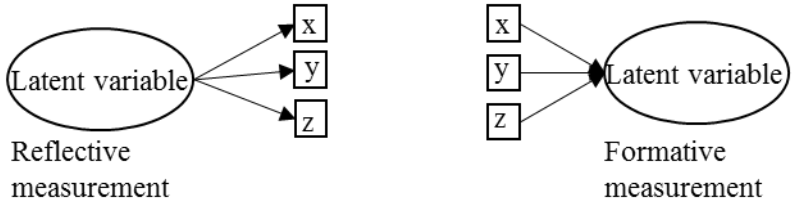

Figure 3.4: Reflective and formative measurements

Source: Kidd (2016)

Secondary data: For RTA measurements of the competitiveness of the cocoa industry of Cameroon in comparison with other cocoa producing countries, trade data was sourced from the International Trade Centre (ITC, 2016) and the Food and Agricultural Organisation (FAO, 2016) online statistical data bases. The ITC is a subsidiary of the World Trade Organisation (WTO) and the United Nations Conference on Trade and Development (UNCTAD). The ITC provides trade data from 2001-2015 for about 220 countries for over 5 300 harmonised system (HS) coded products. Trade data in this site is given in terms of volume, values, market share, tariffs and growth rates. The FAO, on the other hand, provides statistical data only for agricultural goods imported and exported inputs of production such as fertilizers and pesticides, irrigation, machinery, consumption, land use, etc. While the ITC provides data only from 2001-2015, the FAO provides data for as far back as 1961 through to 2013; it however only provides agricultural data (400 agricultural related exports). Data from FAO was used to compile the Agricultural Based Competitiveness Index while that from ITC is used to compile a Multi-sector based Competitiveness Index (Boonzaaier, 2015). In addition, more secondary data related to Cameroon's history, economy and performance was obtained from published documentations such as Madeley (1987), Bamou & Masters (2007), Debrew & Battisti (2008), Traoré (2009), National Human Development Report (2013), Achancho (2013).

3.4 The Cocoa Executive Survey (CES): Method of sampling

The study was carried out in the South West region of the country, which is considered representative in context of competitiveness analysis as it is also the biggest producing region of the country. In 2012, this region produced over 150 000 tons of cocoa which is approximately 58 % of the total cocoa production of 256 000 tons (FAO, 2016). A non-probability sampling known as the purposive sampling was used for the study. Purposive sampling is defined as a type of sampling in which, ''particular settings, persons, or events are deliberately selected for the important information they can provide that cannot be gotten as well from other choices (Maxwell, 1997). This type of sampling was used because not all the farmers are educated enough to fill the questionnaires so only the educated ones were included in the survey. Also some of the extension workers are French speaking who do not have a full

mastery of the English language and for this reason, only the English speaking ones were included in the survey.

Questionnaires were distributed through the Extension Service of the Department of Agriculture (a highly competent and respected service – refer to 5.4.4.3). The researcher briefed such extension officers and they dispatched the questionnaires to farmers attending training sessions on cocoa production. Only respondents qualified to read and comprehend the questions were requested to participate. Five main producing districts were considered for the survey namely: Kumba, Konye, Mbonge, Bafia and Munyenge. A total of 150 questionnaires were distributed to various stakeholders; only 70 questionnaires (47%) were returned. Of this number, only 65 were considered usable for the study because the other five were incomplete, giving a total response rate of only 43%. The relatively low response rate can partly be attributed to the fact that many of the respondents were French speaking and may have had difficulties with some of the questions. Considering other value-chain players, it was ensured that the responses of the main companies and role players involved in the cocoa value chain were recorded. (Refer to section 4.5 The Cameroon cocoa **value chain** and chapter 5.4 for a breakdown of respondents)**.**

3.5 CES data analysis

Considering that the questionnaires were distributed as hard copy, the first step of analysis was to prepare the raw information in a computable format for further analysis. This involved manually capturing the information into a spreadsheet using Microsoft Excel and thereafter the data was analysed using the Statistical Package for Social Sciences (SPSS). The study made use of repeated measures of analysis. The mean rating scores of the subgroups were obtained by use of one-way analysis of variance (ANOVA) while statistical comparisons were done using the chi-square analysis.

Data collected from the CES were also analysed using the principal component analysis (PCA) to identify highly correlated or redundant factors and uncorrelated factors of the statements regarding the six major determinants of the Porter Diamond model. Principal Component Analysis (PCA) is a dimension reduction technique. The highly correlated factors refer to factors for which respondents' responses were very similar or concentrated on a particular rating otherwise known as consensus factors. Uncorrelated factors on the other hand refer to factors for which respondents had observations that were more variable. Responses within the PD model were subject to PCA using ones (1) as prior communality estimates. Extraction of the components was done using the principal axis method followed by a varimax rotation. Meaningful components had Eigen values larger than 1 and were retained for rotation. An item was interpreted as loading on a given component if the factor loading was 0.40 or greater for that component and less than 0.40 for the other (Kidd, 2016). The results of this analysis will be discussed in Chapter 5.

3.6 Conclusion

The aim of this chapter was to elucidate on the analytical methodology and framework that was applied in the study. The RTA technique, based on recorded trade to measure competitive performance, was applied to data from FAO and Trademap (ITC). The identification and analysis of the determinants and factors that influence the industry's competitive performance were done through the application of the Porter Diamond model to obtain opinions gathered from industry role players. Two new extensions were made to the approach used in previous studies. Firstly, the framework was extended by including value-chain analysis, carrying out RTA measurements for the various value adding processes along the cocoa value chain. Secondly, the interrelationship between the Porter Diamond determinants was tested within the cocoa industry of Cameroon to determine if the determinants and factors are consistent with the Porter theory or not. The various statistical methods of analysis that were employed to analyse the data from the CES were also outlined as well as the general presentation of the framework of analysis that was employed in the study to analyse the industry's competitiveness.

CHAPTER FOUR: OVERVIEW OF THE CAMEROON COCOA INDUSTRY

4.1 Introduction

This chapter aims to give a descriptive overview of the cocoa industry in Cameroon. An understanding of the Cameroonian cocoa industry and its competitive performance will firstly entail placing the industry within the global context of production and marketing of cocoa. A description of the local institutions and structures will follow, inter alia referring to the value chain in Cameroon

The first part will consist of the performance of the cocoa sector with reference to the production, marketing and consumption trends at a global scale. The second part will describe the Cameroon cocoa industry in detail starting from a historical background of cocoa in Cameroon, production and marketing trends and then describing the Cameroon cocoa industry value chain and end with the concluding remarks.

4.2 The Global Cocoa Industry

4.2.1 World cocoa production

With a market value of above US$6 billion, cocoa is among the most important agricultural exports of some developing countries where about 72% of global cocoa supply comes from African, Caribbean and Pacific (ACP) countries indicating that cocoa production is concentrated in a small number of countries. Although originally from the Americas, the main countries producing cocoa are found in Africa and more particularly West Africa (Irfan, 2004). Cocoa producing countries fall under a diverse economic group ranging from high income countries (Brazil and Malaysia) to lower income countries like Ghana and Nigeria while Cameroon and Côte d'Ivoire find themselves in the middle. Cocoa is one of the main agrarian products produced and exported in the four West African countries mentioned above. Generally, about 90-95% of all cocoa produced is done by smallholders on farm sizes of about 2 to 5 hectares (4.9 -12.3 acres) (ICCO, 2007) with about 40-50 million people worldwide depending on cocoa for their livelihood (WCF, 2012). There are three species of cocoa grown: criollo, forestaro and trinitaro with each having its own distinctive characteristics however about 93% of cocoa produced in the world is the forestaro specie (Traoré, 2009).

According to Omont (2001) close to 90% of global cocoa production comes from extensive cultivation in smallholdings of less than 5 hectares. Although production structures are unique to each continent, most of the cocoa produced in Africa is done on smallholdings while countries such as Brazil and Ecuador grow cocoa predominantly on larger estates whereas in Asia, cocoa is grown on both smallholdings and large estates.

Figure 4.1 below illustrates global cocoa beans production since 1961. Production has increased from 1 186 364 tons in 1961 to 4 450 263 tons in 2014, but this increase has however not been linear and has fluctuated in various patterns among the different regions (FAO, 2017). World production of cocoa beans has experienced significant growth since 2000; this can be attributed to the efforts made by various governments to increase production and productivity. In 1990, world cocoa production was 2.5 million tons, which increased significantly to 3.37 million tons in the year 2000, and a corresponding 4.6 million tons in 2011.

In the years 2008-2010 Africa witnessed a slight fall in cocoa production of about 6.7% due mainly to the political unrest in the Côte d'Ivoire (WCF, 2012). The WCF, in 2014, notes that between 2008 and 2012 cocoa production has grown by 13% depicting an annual growth rate of 3.1%. However, this growth rate is expected to slow down due mainly to climate change and global warming characterised by droughts (West Africa) and excessive rain and wind conditions (Indonesia) which adversely affect cocoa yield. In 2013, there was a slight fall in cocoa production to about 4.5 million tons. After having enjoyed two years of supply surplus the 2012/2013 cocoa season witnessed a fall in supply of about 160 000 tons, approximately 3.7% (ICCO, 2013). Although production in Côte d'Ivoire and Ghana dropped by 85,000 tonnes, both countries still accounted for 58% of the world cocoa output. The Americas experienced nearly a 5% decline in production, down to 618 000 tons, due mainly to the fall in output in Brazil and the Dominican Republic while Asia and Oceania experienced a 2% drop to 500 000 tons (ICCO, 2013).

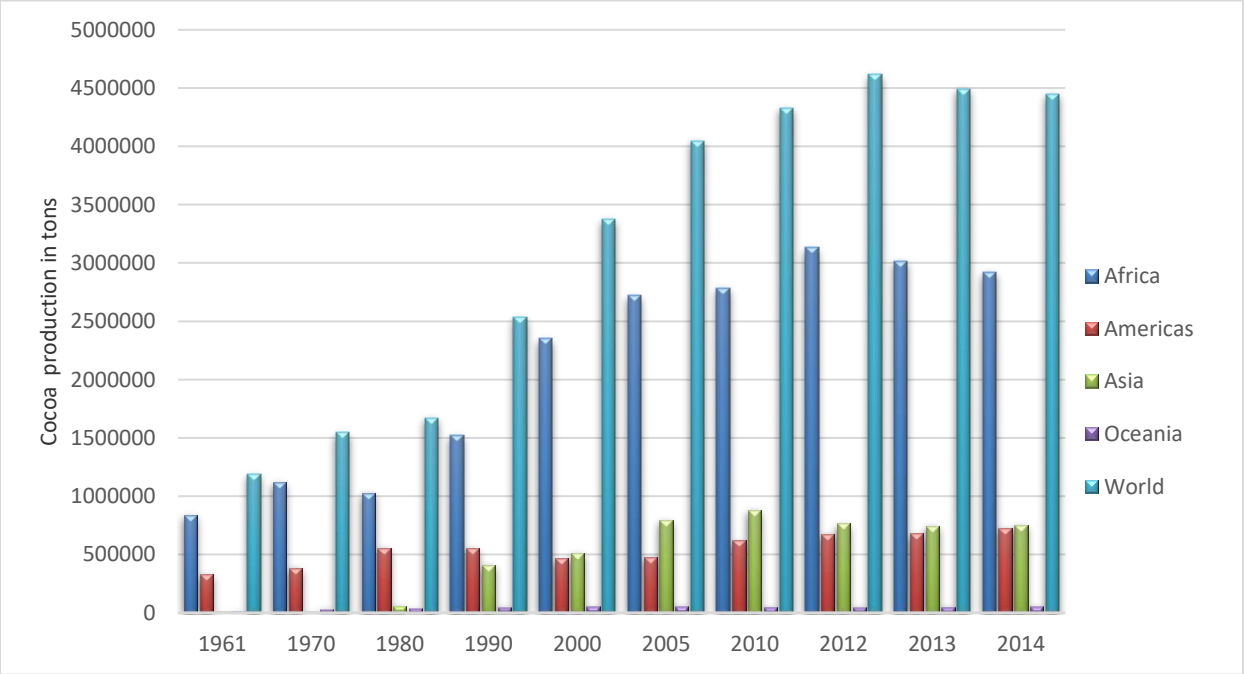

Figure 4.1: Cocoa beans production by region over time

FAO (2016)

The figure below shows the trend of cocoa production in the world in terms of the area harvested and the production quantity. Production increased steadily since the early 1990s but declined due to the 2000 international price shocks but, with the gradual price increase, production has regained an upward trend. On the other hand, areas harvested declined in the year 2000 but gradually increased with a periodic fall in 2002. On average cocoa bean yields have increased from the early 1960s until present with periodic all-time highs in 1996 and 2006.

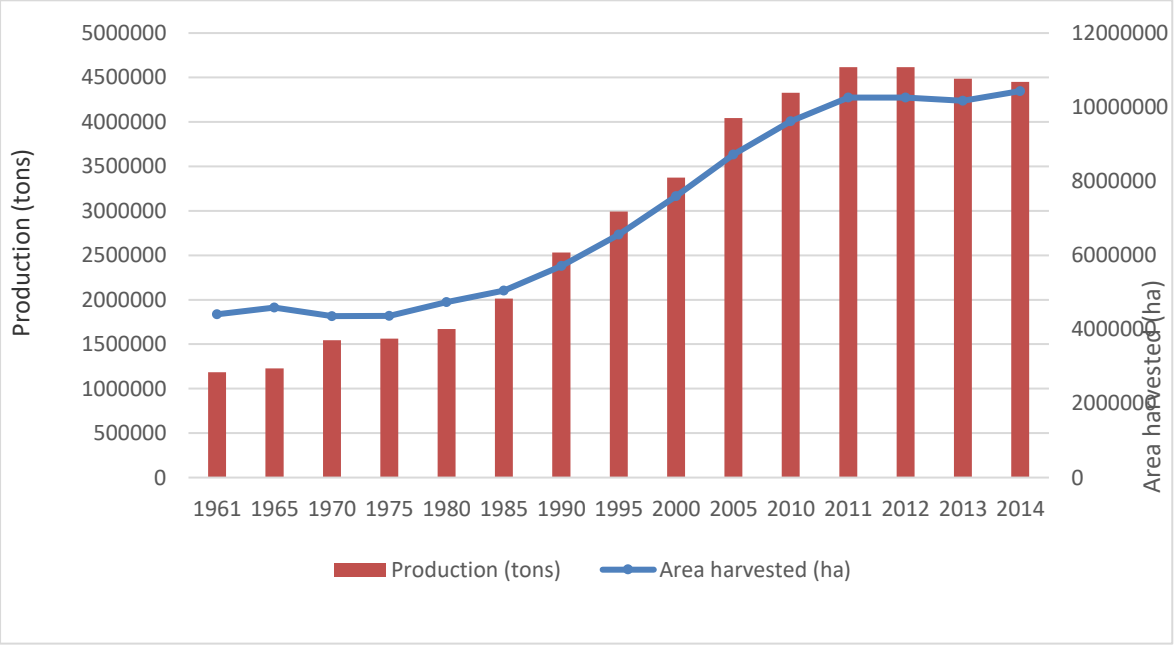

Figure 4.2: World production trend and area harvested

Source: FAO (2017)

Africa is the main producer of cocoa beans and by 2013 it was responsible for over 66% of the total production (FAO, 2017). Five African countries were among the ten top producers of cocoa in the year 2013, as illustrated in figure 4.3 Among these top countries production has increased significantly in some while others have witnessed a fall in their production since the 1980s In the early 80s Brazil was a fair producer of cocoa producing 380 000 tons in 1983, almost as much as Côte d'Ivoire who produced 412 000 tons. While the former seems to have disengaged in cocoa production primarily due to disease outbreak reflected by the 25 000 tons it produced in 2013, the latter on the other hand, has continued to increase its production almost exponentially to the 1.4 million tons produced in 2013. Ghana and Indonesia have equally witnessed an increase in their production from 168 000 tons in 1983 to 858 720 tons in 2014 and from 19 600 tons in 1983 to 728 400 tons in 2014 respectively (FAO, 2017). The cocoa market share for Cote d'Ivoire has increased from 7% in 1961 to 32% of global production in 2013, overtaking Ghana as the largest producer in the world since 1978.

In 2013 Côte d'Ivoire, Ghana, Nigeria and Cameroon accounted for 97.1% of total cocoa production in Africa and 64% of world production (FAO, 2016).

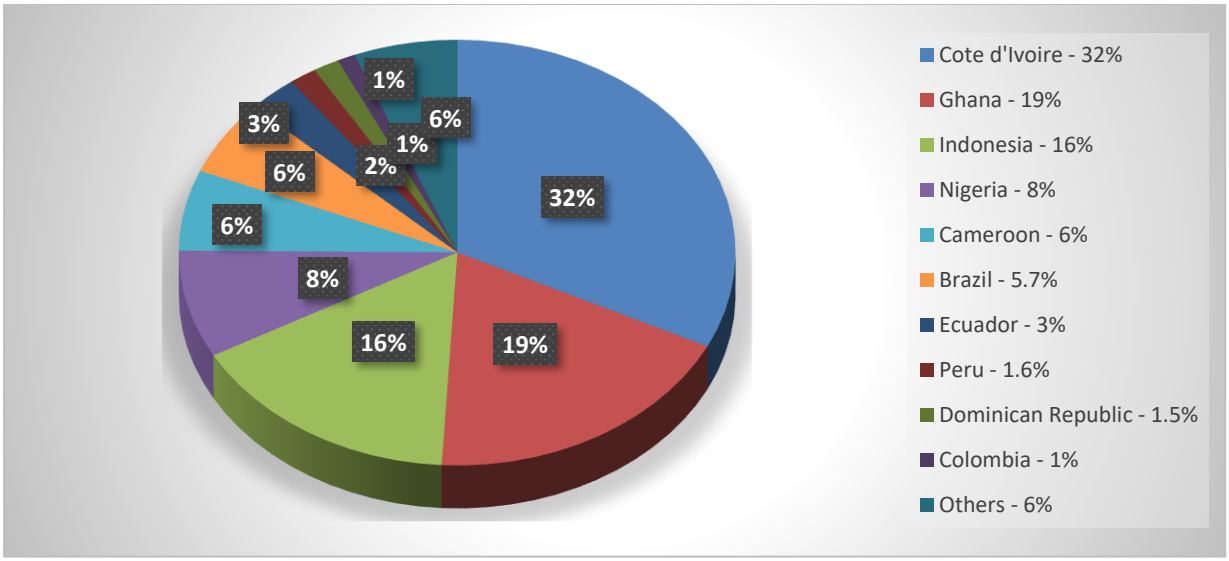

Figure 4.3: Main producers of cocoa in the world

FAO (2016)

4.2.2 World cocoa beans exports

During the years 2007 to 2011, global exports of cocoa witnessed an increase from 3.1 million tons to 3.7 million tons in 2011 and then dropped to 2.7 million tons in 2013. Africa plays a pivotal role in the global export of cocoa accounting for approximately 77% of world's cocoa exports between the years 2007 and 2011 while the Americas accounted for 6.3%, and Asia and Oceania 16.3% (ICCO, 2012). The top five exporting countries are Côte d'Ivoire 37.4%, Ghana 21.7%, Indonesia 14.7%, Nigeria 7.1% and Cameroon 6.1% (ICCO, 2012). Although Cote d'Ivoire remains the largest exporter of cocoa beans its exports have been volatile and dropped from 1 113 177 tons in 1999 to a mere 813 891 tons in 2013. Even though cocoa production and export in the main producing countries have increased over the years, their global market share has been slightly reduced. Table 4.1 shows the share of Africa's cocoa beans exports to the world.

Table 4.1: Africa's share in world cocoa beans export

Year	World's export Quantity (tons)	World's export value (US$)	Africa's export Quantity (tons)	Africa's export value	Africa's share in quantity	Africa's share in value
2000	2 503 429	2 217 209	1 723 118	1 568 765	69%	71%
2001	2 388 611	2 471 284	1 674 280	1 761 084	70%	71%
2002	2 442 988	3 957 458	1 651 453	2 721 446	68%	69%
2003	2 404 384	4 366 283	1 684 471	3 070 139	70%	70%
2004	3 042 880	4 412 366	2 193 099	3 080 101	72%	70%
2005	2 981 935	4 412 797	2 042 340	3 002 683	68%	68%
2006	3 027 329	4 717 183	1 997 086	3 184 218	66%	68%
2007	2 761 772	4 964 060	1 758 366	3 073 924	64%	62%
2008	2 683 210	5 997 995	1 745 464	3 768 998	65%	63%
2009	2 997 678	7 973 559	1 930 335	5 223 464	64%	66%
2010	2 698 650	8 155 540	1 631 600	4 917 432	60%	60%
2011	3 314 332	9 621 400	2 407 420	6 832 623	73%	71%
2012	2 982 170	7 724 461	2 079 214	5 366 600	70%	69%
2013	2 724 969	6 853 432	1 777 698	4 375 316	65%	64%
Total	38 954 337	77 845 027	26 295 944	51 946 793		

Source FAO (2016)

4.2.3 World processed cocoa exports

It is worth noting that although cocoa exports have increased over the years, most of the exports are in its raw form. In 2000, Africa only processed 8% of its total cocoa production while the rest was exported to the main processing regions, i.e. Europe and America (Traoré, 2009). None of the major cocoa exporters process more than 40% of their cocoa exports between the years 2003 to 2009. Between these years 24-35% of cocoa exports from Côte d'Ivoire are processed, Ghana processed 6-15%, Indonesia 23-34%, Nigeria 2-14% and Cameroon 10-27%. On the contrary, most exports from minor cocoa exporting countries such as Thailand, Mexico and Guatemala are in the processed form with Costa Rica processing approximately 90% of its cocoa exports (Boansi, 2013). The little processing at the origins can be attributed partly to a number of factors such as the fact that cocoa processing does not create employment given that the activity is mainly capital intensive and the rational for promoting cocoa processing was to create jobs for the local population. Also processing at the local level was not as competitive as in consumer countries coupled with the fact that there is only one supplier of beans at the local level (Traoré, 2009). Figure 4.4 illustrates the world's exports of processed cocoa.

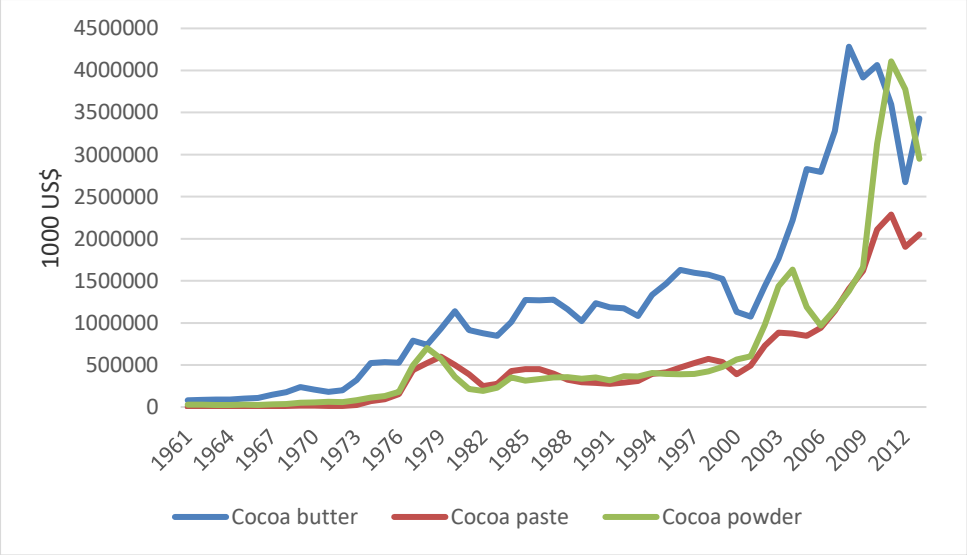

Figure 4.3: World processed cocoa exports in value

Source: FAO (2016)

4.2.4 World cocoa beans imports

World cocoa beans export has increased from 2.38 million tons worth $ 2.47 billion in 2001 to 2.7 million tons worth 6.8 billion in 2013. This increase can be explained by the evolution of global harvest. In 2013, the world imported 2.9 million tons of cocoa beans worth $ 7.7 billion indicating that the demand for cocoa is higher than its supply in the international market (FAO, 2016). Contrary to its production, cocoa is consumed all over the world with its main importers being the developed countries. The largest importer of cocoa in 2013 was Europe, which accounted for 59% followed by Asia 22%, the Americas 19% and Africa and Oceania 0.5%. Imports by the EU account for approximately 1.5 million tons worth about $ 4.2 billion. The ACP countries supply close to 90% of EU cocoa imports with Côte d'Ivoire and Ghana alone accounting for 60% (Agritrade, 2012). The high cocoa imports from the ACP countries are attributed to the duty free trade that takes place between these countries and the EU under the Economic Partnership Agreement (EPA). Although the EU was the biggest cocoa beans importer in 2013, their imports however recorded a significant decline compared to 2011; probably due to the economic crisis. The Netherlands is the largest importer of cocoa in the EU accounting for 40% of EU imports. Figure 4.4 represents the top six importers of cocoa in the EU who absorb 92 % of EU cocoa imports. One reason that can be attributed to the EU being the largest importer of cocoa beans is that it has the largest chocolate factory in the world.

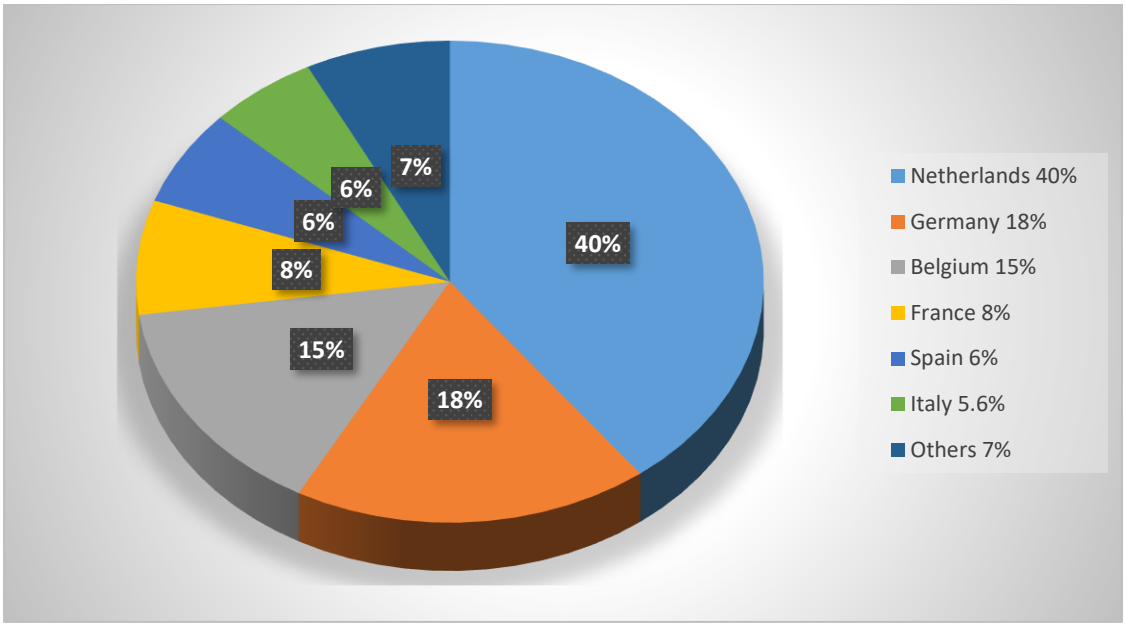

Figure 4.4: Main EU importers of cocoa in tons

Source: FAO (2016)

4.2.5 World cocoa consumption

Once cocoa beans have been harvested, fermented, dried, and transported, they undergo various processing stages (cocoa butter, cocoa powder and cake and cocoa paste) before they can be mixed with other ingredients to produce chocolate for commercial consumption. Ground cocoa beans are used to produce cocoa liquor, which is pressed to yield cocoa butter and cocoa powder. Cocoa liquor and varied quantities of cocoa butter are the main raw materials for the production of chocolate. The grinding of cocoa beans serves as an analytical measure of historic and anticipated demand and through processing total cocoa beans; demand is comparable to its supply (WCF, 2014). According to (Oxfam, 2002), good quality chocolate is expected to have a relatively high cocoa content (70%) but in the UK and North America most of the popular chocolate bars only contain 20% cocoa.

Although Europe and the Americas are the largest cocoa processing regions; processing fell from 43% and 26% in 2002 to 40% and 21% respectively in 2011/2012. Both regions however witnessed an increase in processing activity at the rate of nearly 4% in the 2012/2013 season corresponding to 1.575 million tonnes and 878,000 tonnes respectively (ICCO, 2013). Africa and Asia on the other hand witnessed an increase in cocoa processing within the 2002/2003 period from 14% and 16% respectively to 18% and 20% in 2011/2012 (ICCO, 2012). This is an indication that the major producing regions have started engaging more actively in cocoa processing. The increase in cocoa processing activities in producing countries, particularly Africa and Indonesia, have increased cocoa grindings at origin to 1.743 million tons; approximately 45% of world grindings in 2012/2013 (ICCO, 2013). The

Netherlands is the largest processing country accounting for approximately 13% of global cocoa grindings (WCF, 2014). Table 4.1 represents the top ten importers of post-processed cocoa products in 2011.

Table 4.2: Imports of post-processed cocoa products in 2014 (Nominal value in $1000s)

Cocoa butter		Cocoa paste		Cocoa powder and cake	
Germany	464 280	Germany	356 263	USA	781 154
USA	453 387	France	351 436	Spain	271 419
Netherlands	414 183	Netherlands	350 070	France	265 065
Belgium	363 818	Belgium	220 884	Germany	258 995
France	275 581	Russia	167 643	Netherlands	239 136
United Kingdom	185 013	Poland	141 226	Italy	141 405
Switzerland	151 780	USA	105 641	Russia	140 682
Russia	149 458	Ukraine	94 230	Malaysia	136 801
Poland	135 290	China, mainland	90 448	China, Mainland	121 255
Canada	119 536	Canada	84 605	Australia	118 868

Source: WCF (2014).

While global cocoa production has unsteadily increased with an annual growth rate of minus 10% to plus 18%, the demand and supply situation has been characterised by wide fluctuations. Grindings have steadily grown at a rate of between 2 to 7% (slower than production) except for 2008/2009 when the global economic crisis led to a fall in production (ICCO, 2012). Global cocoa processing followed an upward trend growing at an annual average of 2.9% between 2002/2003 and 2011/2012. After having enjoyed an increasing trend from the 80s, the global stock/grinding ratio has declined since 1991 to 2010 with slight temporary increasing in 2004, 2006, 2009 and 2011 reflecting an increasing demand for cocoa beans. Gaps between cocoa supply and grinding show deficits in global supplies as shown in figure 4.6 below.

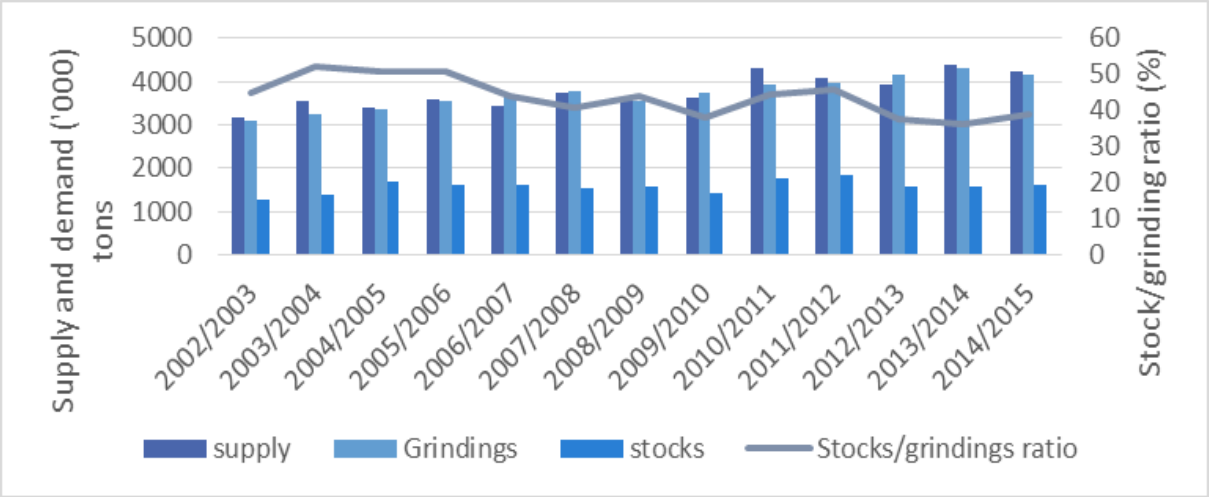

Figure 4.5: Global supply and demand balance of cocoa

Source: ICCO (2016)

4.2.6 World cocoa pricing and trading

Trade in cocoa can be either at the physical markets or at cocoa futures. Physical markets involve the physical exchange of commodities and are common in cocoa origin countries. Cocoa futures on the other hand refer to a commitment to make or to take delivery of a specific quantity and quality of cocoa beans at a predetermined place and time in the future. These futures contracts are used in the cocoa market not as a means to secure the cocoa supply but rather to minimise the risk of adverse price movements (ICCO, 2015). These standardized contracts and exchange serves as a platform for interaction between buyers and sellers and a means of ensuring fair trade and promoting a competitive environment.

Before March 2015, cocoa futures contracts were exchanged globally on two markets, i.e. the New York market (ICE – USD) and the London stock exchange market (LIFFE) and prices in the cocoa futures contracts were only quoted in pounds and U.S. dollars per metric ton. However, due to some major origin country's currencies being pegged to the Euro (Côte d'Ivoire, Cameroon and Togo) and the large share of cocoa processed in the Eurozone, in March 2015, new Euro dominated contracts were introduced to ease the need to hedge against exchange rate risks (ICCO, 2015). Each of the futures contracts is 10 metric tons (WCF, 2014). Figure 4.7 illustrates the evolution of global cocoa prices from 2000 to 2012.

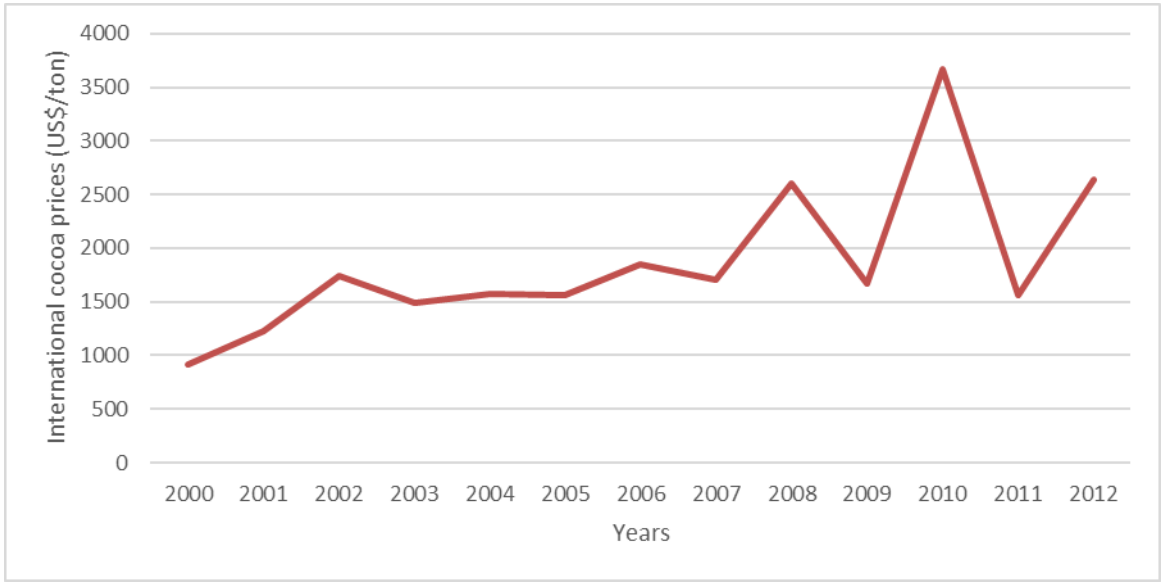

Figure 4.6: Evolution of global cocoa prices (Nominal prices)

Source: ICCO various annual reports

The figure depicts a steady increase in the global nominal prices of cocoa but the years 2007-2011 are characterised by high volatility. Global cocoa prices rose between the years 2006 to 2009 mainly because of the production being less than the demand during these years. The highest price during the

period 2001 at 2012 was observed in 2010 in which a 32-year high was witnessed in the New York market (US$ 3 674/ton) and a nine-month high in the London market (at £2,334 per ton). The upward surge in prices was due to the heightened supply tensions from the export ban of cocoa from Côte d'Ivoire due to unresolved presidential elections (ICCO, 2010). The drop in prices in 2011 was due mainly to the price volatility thorough out the years, the Euro- zone crisis and excess supply from origin countries and discouraging cocoa grinding figures from the mature markets. A higher than expected supply deficit in 2012 resulted in the price increase. The lowest price was recorded in 2000 (US$ 919 per ton).

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4.3 The Cameroon Cocoa Industry

4.3.1 History of Cocoa production in Cameroon

Cocoa *(theobroma cacao)* is a tree crop with evergreen leaves and does not support very low temperatures; this is the reason why it grows mostly in the tropics or equatorial zones where the average temperature is above 27 degrees Celsius. The crop was introduced in Fernando Po in the sixteenth century by the Spanish and by the late nineteen century cocoa plants were exported from Brazil and planted in several West African countries notably Cote d'Ivoire and Ghana (Bagal, Belletti & Marescotti, 2013). The Germans introduced coca to Cameroon during the colonial period and created the first cocoa plantations on the slope of Mount Fako during colonisation (Laird, Awung & Lysinge, 2007). By 1913 there were 58 cocoa plantations marking the beginning of the long-standing history of cocoa being the main agricultural export of the country (Gockowski & Dury, 1999). The Germans solely won and managed these plantations and forcefully recruited indigenes as contract workers in the plantations and forbade them from taking any cocoa seeds from the plantations but indigenes often times swallowed the seeds and excreted them once out of the plantations hence the gradual spread of cocoa around the area. Under the German mandate, cocoa production in Cameroon was mainly as raw materials for export to German factories abroad. Following the defeat of the Germans in the First World War, the French and British took over the cocoa plantations opening new plantations in the Central, Littoral and South regions. In fact, after the colonial era, most of the plantations were dissolved and workers from these plantations set up their own cocoa farms capitalising on their knowledge of cocoa production (Ruf, 2001. Some of the cocoa plantations erected by the Germans that were not dissolved were taken over by the Cameroon Development Cooperation (CDC) but are no longer used for the production of cocoa due to its high labour intensity. The taking over by the French and British saw a fall in cocoa production in the South West contrary to a blossom in Littoral. In the British mandate zone, cocoa had no great economic importance contrary to the role it played in the French zone where approximately 12% of the entire population depended on cocoa for livelihood particularly during the

last years of colonial rule (Ekert, 1999). Production in the South West (British zone) dropped to a mere 6000 tons approximately eleven times less than the production in the Centre South (French zone) (Champaud, 1966 cited in Mathey & Pascaud, 2010). Production in the South West however began to expand rapidly from the 1960s increasing to 35 000 tons between 1960 to 1989 as opposed to the 20 000 tons production in the Littoral and central areas (Jagoret, 2011).

During the colonial period, almost 50% of total export earnings were from the sale of cocoa making the economy largely dependent of world market price of cocoa with cocoa from Cameroon accounting for approximately 6% of world cocoa production (Jakobeit, 1991). In the 1940s and 1950s cocoa production in the cocoa belt of the south central region of Cameroon (the most important cocoa region) was carried out almost exclusively on small-scale family plots (Joseph, 1977). Since the country gained its independence in the 1960s the government was actively involved in the control and functioning of the cocoa sector through the provision of support and quality and price control until the 1990s. The *Office National de Commercialisation de Produits de Base* (ONCPB) set up by the state to organise the trade and finance of cocoa was responsible for fixing prices and marketing margins, i.e. the board served as the manager and stabilizer. Farmers were expected to deliver their products to local points of collection and the products were then transferred to the provincial collecting points where control was done and then the cocoa was sent to storage facilities for packaging and eventual export. The ONCPB paid farmers according to the quality of their cocoa (KIT, 2010).

In the early 1990s, Cameroon suffered a severe economic crisis, which prompted the government to implement various reforms such as the structural adjustment programs that had more negative than the anticipated positive effects on the economy (Konnings, 1996). In a bid to stabilize the domestic economy the SAP required minimal government intervention in the economy and advocated for market liberalization which involved reduction in public expenditure, removal of subsidies, privatisation and producer price reforms to name a few (Konnings, 1996). Liberalization of the cocoa market has restricted the power of the ONCPB in quality and price control and allying local producers to world prices, as well as withdrawing the buying monopoly of cooperatives, resulting in an influx of new cocoa traders who were often inexperienced and not quality conscious (KIT, 2010). In addition, the withdrawal of government subsidies to cocoa farmers saw the abandonment of many cocoa plantations while some farmers switched from cash crop to food crop production. The influx of new cocoa traders - and the absence of government support for cocoa farmers - focused on quantity of cocoa produced rather than quality; this negatively affected the reputation of Cameroon cocoa in the world market as cocoa from Cameroon was often considered as rejects in the world market. After the liberalisation, internal quality control was neglected and the ONCPB was instead involved in checking quality and certification at the export ports resulting to in poor quality and unreliable deliveries and a consequent price discount at the international level (Laven, 2005). The additional reforms implemented in 1997/98

shifted the quality control responsibility to the private sector and in 1998 four other quality control agents in charge of issuing quality certificates at the port were added to the initial three being Cornelder, SGS and Observatoire Camerounais thereby giving exporters and international buyers a wider choice of quality control companies (Laven, 2005). While some authors have criticised the liberation of the market blaming it for the major economic downturns such as the fall in the quality of cocoa (Gilbert & Tollens, 2002), and outsourcing of farm labour to non-farm activities (Bamou & Masters, 2007), while others such as Coleman, Akimaya & Varangis (1993) have praised liberalisation for improving cocoa prices and profits in marginal terms.

The government of Cameroon in recent years has become more active in the cocoa sector again to address issues of quantity and quality, supervising cocoa producers and financing various cocoa projects as well as creating regulatory awareness. With the evolving concern of consumer food safety, maintaining basic cocoa quality is often an aspiration to successfully integrate in the world market and a challenge in maintaining the position (Bagal, Belletti & Marescotti, 2013). The active participation of the government in the cocoa sector has resulted in increased cocoa production to about 210 000 tons annually ranking Cameroon the fifth largest producer of cocoa in the world (Bagal, Belletti & Marescotti, 2013). The international cocoa organisation (ICCO) however states that although cocoa production in Cameroon has increased the country is still producing below its capacity and to fully integrate in the world market and meet up with growing demand, particularly with the increase in chocolate consumption, the country is expected to produce above 4.5 million tons of cocoa in 2020 (ICCO, 2012).

4.3.2 Cocoa production in Cameroon

Situated between latitude 3-13° N of the equator and 12° E longitude, Cameroon is among the few tropical countries that produce cocoa in the world. Its diversity of climate (from tropical to semi-arid and hot) and culture has earned it the name ‘Africa in miniature’. Cocoa farms represent about 450 00 ha (37%) of the total cultivated area in Cameroon and is one of the main cash crops in the country produced in the South West, Centre and South regions with the main zones being the South West and Centre zones. Most of the cocoa producing communities are in the South West region, which is responsible for about 50% of the total production. The Centre region accounts for 30% while the South and Eastern regions 10% and 5% respectively (CTA, 2010).

The major cocoa producing areas of Cameroon are located in the South-western regions (50% of total production), Centre (35%), South (10%), and Eastern regions (5%). Kumba, in the Southwest region is the largest cocoa-trading centre in the Central African Region. Note that the South West is the area where the CES was conducted.

As of 2012 cocoa production from the South West was over 150 000 tons (Ministry of Agriculture and Rural Development [MINADER], 2012) which is approximately 58% of the total cocoa production of 256 000 tons (FAO, 2016). Figure 4.8 illustrates the major cocoa producing zones in Cameroon.

Figure 4.7: Major cocoa producing regions in Cameroon

Source: Jagoret (2011)

The South Western basin (left green oval) and the Central South Basin (right green oval).

The high output of cocoa in the South West region, which lies just above the equator and along the slopes of the country's famous Mt Cameroon, can be attributed mainly to its fertile volcanic soils (rich in potassium and other volcanic minerals) and the humid climate which generally favours various types of agriculture (Chambon & Mokoko, 2013). This area is particularly known for its intensive agriculture and it is worth noting that the first cocoa plantations were established in this region during the colonial period. The South West region also has a generally higher average output of more than 425kg/ha compared to the 360kg/ha and 200-300kg/ha in the Centre and South regions respectively (KIT, 2010). Meme division is the largest producing area in the South West accounting for 40% of the total production in the region. This region is followed by the Manyu, Kupe Manenguba and Fako regions which account for 25%, 14% and 11% respectively (estimates from the South West Regional delegation of Agriculture and Rural Development, 2007 cited in Tosam & Njimanted, 2012).

Approximately 75% of rural households in the South and Centre provinces produce cocoa on small plots mostly concentrated along the roadsides, many of which are relatively old and coexist with other crops like fruit trees and timber (Leakey & Tchoundjeu, 2008). There has been a gradual increase in production post liberalisation as illustrated by figure 4.9.

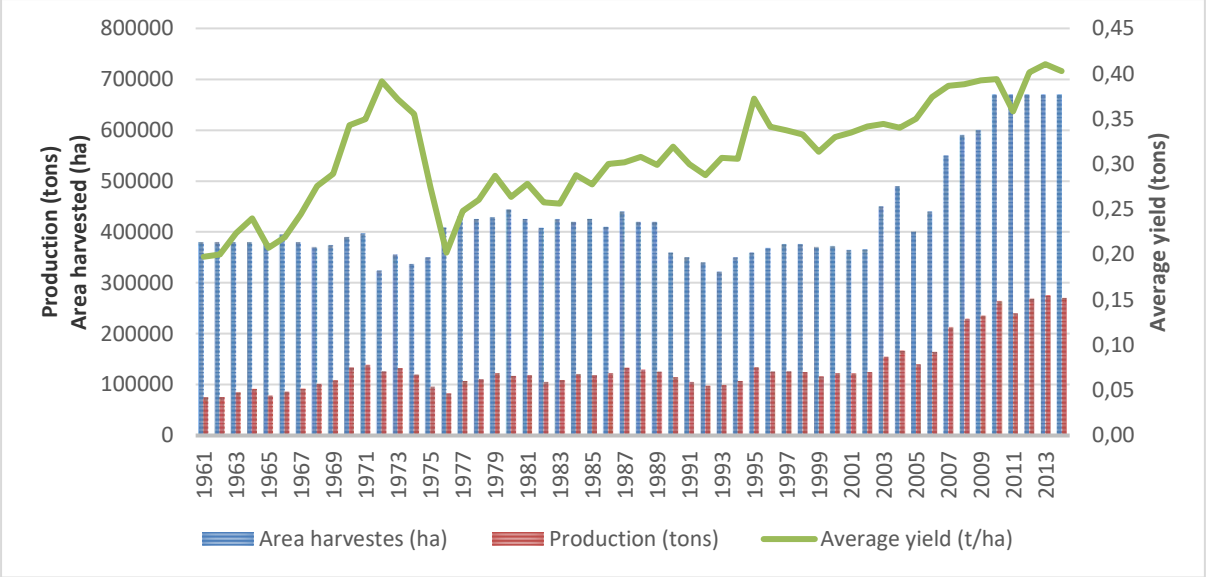

Figure 4.8: Developments in cocoa productions, area harvested and annual yield in Cameroon

Source: Author's own calculation based on data from FAO (2016)

Cocoa production as well as the area harvested have increased significantly from approximately 75 000 tons in 1961 to 209 000 tons in 2013 and 380 000 ha in 1961 to 670 000 ha in 2013 respectively with an average yield of 4 104 tons in 2013 (FAO, 2016). Cameroon produced a total of 264,077 million tons of cocoa in 2010 which dropped to 209 905 million tons in 2013 but the year 2014 saw a slight increase in production to 232 530 million tons making it the fifth largest producer of cocoa in the world after Cote d'Ivoire, Ghana, Indonesia and Nigeria (FAO, 2016).

During the launching of the 2015/2016 cocoa season on August 8, 2015 in Ayos, Ndoping the manager of the NCCB, announced a new high in cocoa production of 271 792 tons in 2014/2015. It is worth noting that although production has increased over the years the country is still producing below its potential capabilities due to constraints such as pests and diseases, price volatility, small farm sizes, ageing farmers (most over 50-years old) and cocoa trees. The cocoa tree has a life span of between 30-35 years and, although it can last for up to 90 years, production tends to drop after 10 years (Coulibaly, 2012). Most of the cocoa farms in Cameroon are more than 30-years old and producers were discouraged from investing in replanting programs due to the inability of the NCCB to pay them in time.

Cocoa produced in Cameroon has four distinct grades namely; Grade 1: which represents cocoa that is well fermented; Grade 2: moderately fermented cocoa; off-standard cocoa; and cocoa residues that are unfermented cocoa (Folefack & Gockowski, 2004). According to Bagal, Belletti & Marescotti (2012), cocoa beans from Cameroon often have high moisture content resulting to 10% of the cocoa beans being moulded as compared to 5% in Côte d' Ivoire. The high moisture content in Cameroonian cocoa mostly results from prolonged rains, insufficient phyto-sanitary treatments, poor drying and storage facilities.

This is particular of the challenges faced by the farmers in the Konye who received a below average price for their cocoa because of its high moisture content. License Buying Agents (LBA) sometimes exploit the situation by charging farmers lower than the average price of between 1,180 CFA/kg ($2.25) and 1,250 CFA/kg ($2.40) due to the lack of moisture testing machines and the fact that most of the farmers are illiterate and desperate (cocoa harvesting coincides with the opening of schools) (WEF, 2014).

The government of Cameroon has launched an awareness campaign especially regarding the drying of cocoa and particularly eliminating the habit of drying cocoa on tar. In August, the non- profit SNV Netherlands Development Organisation and the IITA gave seven moisture-content testing machines to the Konye area (WEF, 2014). The government of Cameroon projects that with the availability of planting materials and the creation of new cocoa it could achieve a production of 600 000 tons by 2020 (Levai et al., 2015). Recent figures show that in the 2015/2016 season cocoa production fell 269 496 tons, approximately 0.85% compared to the previous season (NCCB, 2016). According to reports from Reuters Africa (2016) cocoa output for the 2016/2017 are projected to further fall by up to 10% compared to the previous season due to prolonged dry weather conditions, which delayed flowering. Note should be taken that although production was projected to increase the average, production per hectare is still low ranging between 300-400kg/ha.

4.3.3 Institutional structure of the Cameroon Cocoa industry

There are several institutional structures in the Cameroon cocoa sector involved in various stages of activities along the cocoa value chain.

4.3.3.1. Regulatory organs

Two main institutions are responsible for the regulation of cocoa, namely the Ministry of Agriculture and Rural Development (MINADER) and the national cocoa and coffee board (NCCB). MINADER assists farmers to stimulate and increase production, is involved in the provision of regulatory activities for cocoa production from planting to fermentation as well as agricultural and extension services. This involves the deployment of extension officers in various production zones to sensitise cocoa farmers to good agricultural practices. They also assist farmers to secure, handle, transport and market their products (KIT, 2010). The ONCPB created under the French and British mandate served as a *'caisse de stabilisation'* in the cocoa sector. It was responsible for setting both farm-gate and export prices, negotiating export contracts, quality control, acting as a marketing board and regulating the cocoa value chain and ensuring that all participants had licenses with the ultimate goal of ensuring that price fluctuations in the world market were not felt at the micro level (Akimaya *et al.,* 2003. Following the dissolution of the ONCPB, the NCCB was created by a decree in 1991. The NCCB, a public

administrative establishment that adopted a financial autonomy and placed under the trusteeship of the ministry of commerce, is responsible for commercialisation and regulation of cocoa and coffee (Bagal, Belletti & Marescotti, 2012). The principal function of this organ is to control the quality of cocoa exported and as such, agents pay frequent visits to technical facilities of organisations (plants) involved in drying, cleaning, grading and storing cocoa to ensure that they comply with the set agreements of standards. Some secondary functions include promoting the image of Cameroon by means of defending and promoting cocoa products, monitoring international cocoa and coffee agreements and representing Cameroon in international cocoa organisations, monitoring cocoa exports and marketing seasons among others.

4.3.3.2. Inter- professional cocoa and coffee board (CICC)

One of the principal objectives of the liberalisation of the cocoa sector was to encourage professionalism of the various actors along the cocoa chain and this is reason why the NCCB and CICC seek to provide an enabling environment for the professionalization of such actors. Cameroon is a member of the CICC; is a non-profit oriented technical structure created in 1991 with the main aim of monitoring and executing tasks necessary to assist cocoa and coffee producers. It brings together various stakeholders of the cocoa and coffee sector; producers, buyers, local processors and exporters who adhere to its status (CTA, 2008). The CICC consists of four colleges namely: college of producers (national association of cocoa and coffee producers), which is made up of common initiative groups, federations, etc, association of cocoa and coffee buyers and millers, exporters association and lastly the association of transformers or processors. The CICC also engaged in improving the quality of cocoa produced in Cameroon through the supply of materials to test the quality of cocoa, micro haulers and drying ovens and training farmers on cocoa quality. It also informs buyers when producer organisations have cocoa for sale by means of radio programs and publishes information about the cocoa and coffee sectors in the information bulletin (CTA, 2008). The creation of the development fund for the cocoa and coffee sectors in March 2006, and a subsequent follow up and coordination committee in July 2007, was spear-headed by the CICC.

4.3.3.3. Professional organisations

For the past two decades, many Sub Saharan African countries have disengaged from the agricultural sector by transferring responsibilities to professional organisations. Cocoa and coffee producer organisations have brought together about 40 000 producers which is approximately 8-15% of the total number of producers (Dada, 2007). These organisations consist of common initiative groups (CIGs), cooperatives, unions, federations and confederations. CIGs were particularly encouraged during the liberalization era to enable producers to sell their products in bulk and it has been relatively successful in reducing assembling and transaction costs and increasing prices for its members. CIGs differ from

traditional cooperatives in that cooperatives have salaried employees while in the CICs, unions and federations' employees receive token compensation (Traoré, 2009). Unions of CIGS consist of representative commissions from each member GIC and representatives from these unions make up federations. While cooperatives and CIGs exist at the level of villages or small localities, federations exist at the regional level while confederations, which represents a group of federations, are national level. Members of this cooperative sell their products directly to the cooperative who in turn sell the cocoa on behalf of its members through an exporter in Douala. CIGs on the other hand act as mediators by consulting its members to determine how much cocoa they have for sale and then negotiating the selling price, directly or indirectly, with the buyers at the various buying centres. There can be more than one CIG, union and federation represented in one village, a farmer cannot however be represented by more than one CIG (and therefore, no more than one union or one federation). Several small farmer cooperatives exist; one of the oldest being the Southwest Farmers' Cooperative Union Limited (SOWEFCU) which was created in 1979. A wide number of CIGs at various levels along the chain also exist ranging from unofficial to those made up of up to a hundred members. The National Confederation of cocoa producers in Cameroon (CONAPROM) which has 15 000 members consisting of 17 Federations, 93 unions and 509 CIGs is one of the various cocoa confederations in Cameroon (Bagal, Belletti & Marescotti, 2012). It is worth noting that farmers in the Centre and Southern regions have not embraced the idea of cooperatives as their counterparts; the Southwest for example, experience many failures in the past where farmers received little benefits despite having paid their dues (Traoré, 2009). In addition, some cocoa farmers are not part of any cooperative or any groups and therefore have little negotiation grounds with the buyers often leading to exploitation on the part of the buyers. It is for this reason that since May 2013, the Organisation for the Harmonisation of Business law in Africa (OHADA) requires producers to be organised into cooperatives (Bagal, Belletti & Marescotti, 2012).. The OHADA is a French system of business laws and implementing institutions that was adopted by seventeen countries in West and Central Africa with the objective of guaranteeing legal and judicial security to its member states.

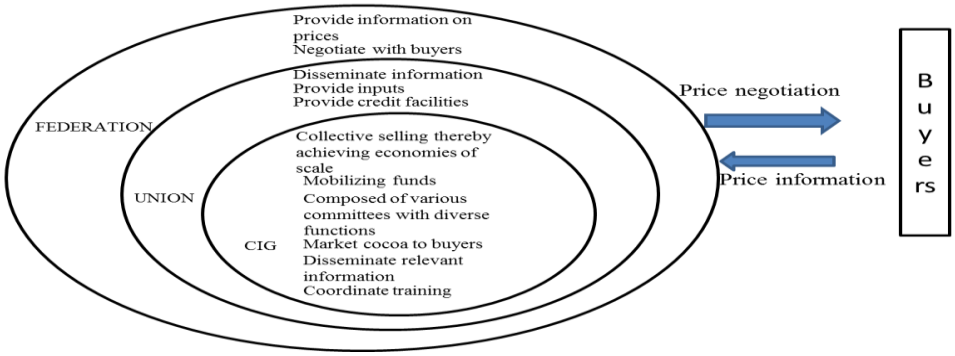

Figure 4.90: Agricultural producer organisations

Source: Dada (2007)

4.3.3.4. The Société de Développement du Cacao; Cocoa development Agency (SODECAO)

Launched in February 1974, the main goal of SODECAO was to actively pursue the rectification of the ailing cocoa sector. It was also responsible for the monitoring of the techniques and methods used in the creation of new cocoa development programs in order to identify the promising ones. During this period the organisation controlled a geographical zone of about 12 500km made up of 86 000 ha of cocoa trees and employed more than 87 000 farmers (Dada, 2007). Between 1980-1990 SODECAO was actively engaged in the cocoa sector, notably in the Centre and Southern regions, focusing its activities on cocoa farming, driving and managing integrated development projects and providing farmers with technical assistance (assigning one officer to 227 farmers). SODECAO gave subsidies to cocoa farmers with the aim of stimulating the production of good quality cocoa beans (Mahob et al., 2014). The liberalisation of the cocoa sector negatively affected the role and success of SODECAO as it could not achieve most of its set goals primarily due to the fact that is largely depended on the government for funds. This also led to a stop in the distribution of pesticides and fungicides by the structure in 1992. Mongo (2006) states, that for the structure to become successful again, it has to devise other means of income or funding and not depend on the government. In recent efforts by the government to revitalise the cocoa sector the structure has once again, though not entirely, become active in the cocoa sector. The structure has been able to organise farmers and producers into groups, support marketing and the provision of phyto-sanitary treatments (Dada, 2007).

Table 4.3: Past and present roles of SODECAO

Role of SODECAO	New Roles
• Input provision • Maintenance of rural roads • Guaranteeing producer prices • Extension services • Collection of cocoa • Coordinating the cocoa sector	• Encouraging more value addition at the farm level • Help improve phyto-sanitary standards • Opening new avenues for access to exporters

Source: Dada (2007)

It is worth noting that information from this study was obtained from MINADER and agricultural producer organisations such as cooperatives which are the main agents involved in the production and sales of cocoa beans.

4.3.4. Cocoa development projects in Cameroon

In a bid to improve both the quantity and quality of cocoa produced in Cameroon in order to meet up with the rising global demand and the stringent quality of cocoa in the international market, several development projects have been implemented in the cocoa sector. Both the government and external partners such as the international cocoa and coffee organisation (ICCO) and the International Institute for Tropical Agriculture have provided a number of extension services, some of which include:

4.3.4.1. The Cameroon Cocoa Rehabilitation Project

This project succeeded the Cocoa Project implemented in 1974 with the aim of improving farmers' livelihoods by increasing cocoa production. This was to be done through the rehabilitation of about 35 000 ha of cocoa trees, planting a further 15 000 ha with high yielding hybrids, provision of extension services, training, improvement of rural roads and the development of cooperatives (World Bank, 1997). This project however failed due to substantial organizational and institutional setbacks and poor government policies. The cocoa rehabilitation project was developed with the aim of overcoming stagnation in cocoa production and output and expanding export earnings through modernisation of the cocoa industry while simultaneously improving the incomes of smallholders. SODECAO was the main medium of implementation of the project and was intended to: (i) improve the system of producer incentives; (ii) improve SODECAO's efficiency and support its ongoing program; (iii) reorganize the cocoa marketing system and marketing cooperatives; (iv) develop a private medium-size plantation program; and (v) strengthen the Ministry of Agriculture's (MINAGRI) ability to implement the cocoa strategy incorporated into the project, and to monitor its execution (World Bank, 1997). This project did not achieve its set goal as there was no measurable increase in production or output but the production instead decreased due to lack of interest in cocoa due to the sharp fall in prices, inadequate roads, difficulty in getting inputs, etc. Although the project recorded some success in the policy aspect, it was generally rated unsatisfactory due to its inability to achieve the development objectives.

4.3.4.2. Improvement of cocoa marketing and trade in liberalizing cocoa producing countries

This project was initiated and supervised by ICCO but executed by the United Nations Office for Project Services (UNOPS) in Cameroon, Nigeria and Cote d'Ivoire. The project, which ran from 2000-2005, was aimed at tackling the deficiencies that the cocoa sector suffered as a result of the liberalization such as deterioration in cocoa quality, lack of financing for cocoa campaigns and lack of information to name a few. The main objective of the project was to improve the functioning of the cocoa supply chain in these countries and to ensure that local producers fully participated in the physical trading of cocoa and simultaneously reducing price and trade risks (ICCO, 2007). Activities carried out under this project generally promoted privately-run warehousing systems, the development of a cocoa marketing

information system (MIS); a quality assurance and certification system and a system of commodity trade finances. The overall outcome of the project was successful with the establishment and improvement of the market information system, quality assurance and improvement, warehousing up-country, etc. (ICCO, 2007).

4.3.4.3. The Sustainable Tree Crop Program (STCP)

The STCP, a project initiated by IITA and funded by the US Agency for International Development (USAID) and World Cocoa Foundation (WCF) among others was launched in Cameroon alongside four other African countries (Nigeria, Ghana, Côte d'Ivoire and Liberia). This project aimed at ensuring that cocoa production achieved its full economic potential and that tree crop farming systems are environmentally sustainable in West and central Africa by means of making sure that cost of production remained low (KIT, 2010). The primary tool used by the STCP was the Farmers' Field School program (FFS) which disseminates training to farmers through the participatory Farmer Field School approach. In these schools, farmers cover topics on integrated crop and pest management (IPM) for controlling the black pod disease (BPD) as well as quality improvement. As of 2009 a total of about 3 200 farmers were trained through the FFS while about 9 000 more benefited indirectly through the dissemination of information among farmers while about 242 fascinators, 12 cooperatives and two cocoa related organisations have been trained (IITA, 2009).

4.3.4.4 The "New Generation" and other government supported programmes

A study carried out in 2010 revealed that average age of a cocoa or coffee farmer in the national plan is 56 years; 56.6 years in the Eastern parts and 65 years in the Western parts of the country. This implies that those involved in the production are mostly old people threatening the durability of production. It is in this view that the "New Generation" program was launched in the cocoa sector in 2012 by the CCIC in partnership with the Ministry of Agriculture and rural development and local youth communities. The main objective of the program was to rejuvenate the cocoa producing population. This involved encouraging youth to engage in cocoa production, professionalising the young producers, creating employment in the rural areas, improving the quality of cocoa and consequently increasing global production and productivity. Under this project, the youths receive training on a variety of aspects such as the cocoa agro-system, production techniques, use and application of fertilizers, post-harvest practices and commercialisation of cocoa, etc. As of 2014 about 600 youths had been trained and approximately 900 ha of cocoa farms had been created. The project aims to increase this number to 1 200 youths and 1 800 ha by the end of 2016. (Maledy, 2014).

Besides the above mentioned projects, various other projects have been undertaken to improve the production and quality of cocoa such as the *Professionnalisation Agricole et Renforcement Institutionnel* (PARI) led by the Ministry of Agriculture and Rural Development (MINADER) and the

STTCP. This re-launch program began in 2006 with its main objective being to create awareness and attract local investors into the cocoa sector. This project engaged in the selection and distribution of improved cocoa varieties, the diffusion of better cultural practices and the facilitation of accessibility to information, credit and farm inputs (Kamdem, 2011; Ndoping, 2011). Other projects include: *Projet d'Appui à la Production et la Commercialisation des Cultures Pérennes (PAPCCP); Fonds de développement du Cacao et Café (FODECC); Projet Semencier Cacao-Café (PSCC); Projet d'Appui à l'Insertion des Jeunes en Agriculture (PAIJA) among others.*

4.4 The market for Cameroon cocoa

Cameroon sells its cocoa both at the local and international markets but most of the cocoa is in raw form. In 2015 Cameroon exported 240 754 tons of cocoa worth US$ 673 776 representing approximately 6.7% of global cocoa in the international market (ITC, 2016). About 97% of the total exports of 2015/2016 were grade II with The Netherlands, Belgium, Germany, Italy and Spain receiving approximately 86% of Cameroon's total cocoa export for the same year (NCCB, 2016). This implies that the export market for cocoa is concentrated in a few countries, which tends to increase dependency of the few exporters and should they impose any major changes in their markets, the Cameroonian cocoa industry will be highly and adversely affected. Figure 4.11 shows Cameroon's exports of the various forms of cocoa over the years.

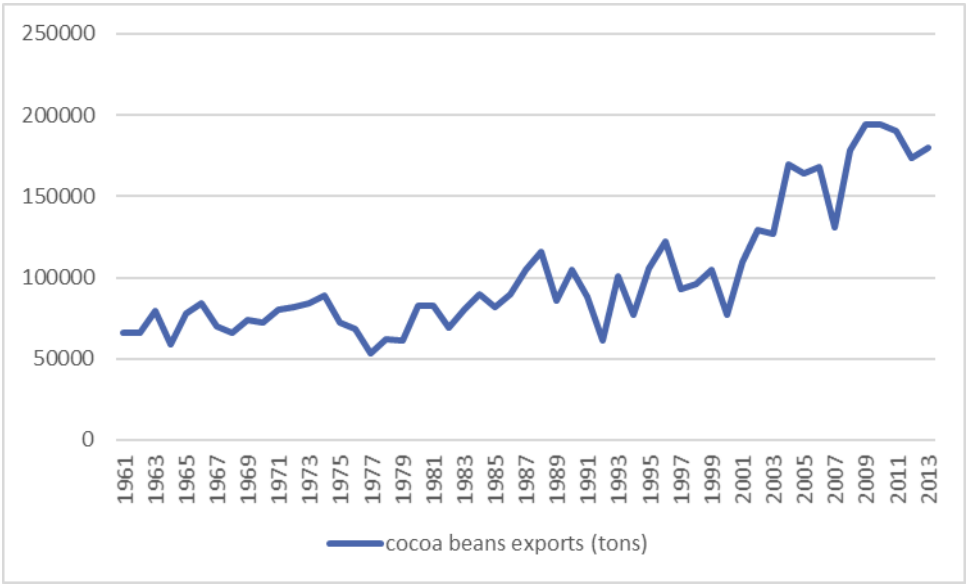

Figure 4.101: Export of cocoa beans from Cameroon

Source: FAO (2016)

Cocoa exports from Cameroon consist of four products grouped into: raw, semi-processed and processed products. Cameroon exports cocoa beans, cocoa butter, cocoa powder and cocoa paste with the latter only commencing in 1974. Exports of cocoa beans have increased steadily from 1992 (61181tons) to 179 933 tons in 2013 (FAO, 2016). Although the EU is Cameroon's main importer of

cocoa as a result of the economic partnership agreement (EPA) legislating free trade between them, the EU however recently tightened its laws on cocoa importation. This follows the 2008 seating in Berlin in which it was agreed by the World Cocoa Economy that cocoa meant for trade was to be uniform in size, fermented, thoroughly dried and void of any smoke, abnormal smell or any form of contamination and reasonably free from broken beans (Levai et al., 2015). In April 2013 about 2 000 tons of Cameroonian cocoa exports were rejected (Business in Cameroon [Business in Cameroon], 2015). This rejection stemmed from the cocoa being dried directly on tarred roads and had high smoke content from drying the cocoa in ovens resulting in the cocoa having a high chemical content considered dangerous for human health. To avoid such situations from happening again the government resorted to free distribution of tarpaulins to farmers and provided ovens for drying in the South West region usually plagued by heavy rains (Business In Cameroon, 2015). This action by the government resulted in an increase in export quantity to 188 129 tons in the 2014/2015 year (NCCB, 2015). Despite its relatively poor performance in the world market, Cameroonian cocoa still has a competitive advantage over its competitors due to its distinctive characteristics. Ghana (2003) cited in Dada (2007), points out the main characteristics for the assessment of quality of cocoa beans are bean quality and size, fat content and flavour. Beans from Cameroon happens to have a good bean size, high fat content and reddish brown cocoa powder and an acceptable degree of acidity and is highly priced in the cocoa powder sector offering it higher competitive advantage than its competitors like Nigeria and Cote d'Ivoire (Lebailly, 1997). To improve on their cocoa quality, both countries need to increase their cost of production which will affect farmers adversely per se, contrary to the case in Cameroon. According to Dada (2007), Cameroon should capitalize on its strength of having superior cocoa than its competitors to increase its market share.

Just like the export market the domestic market of cocoa in Cameroon is concentrated to a few processing industries which process a relatively small portion of the total cocoa output reason. Despite efforts by the government to improve value added between 1990-2013, Cameroon still processes less than 20% of her cocoa output. In 2013, out of the 203 905 tons produced, only 32 700 tons or approximately 15% was processed locally implying that about 85% of all cocoa exports are in raw form. The low processing explains why the government plans to double processing to 30% of the total output by increasing the number of processing units in the country (Reuters Africa, 2016).

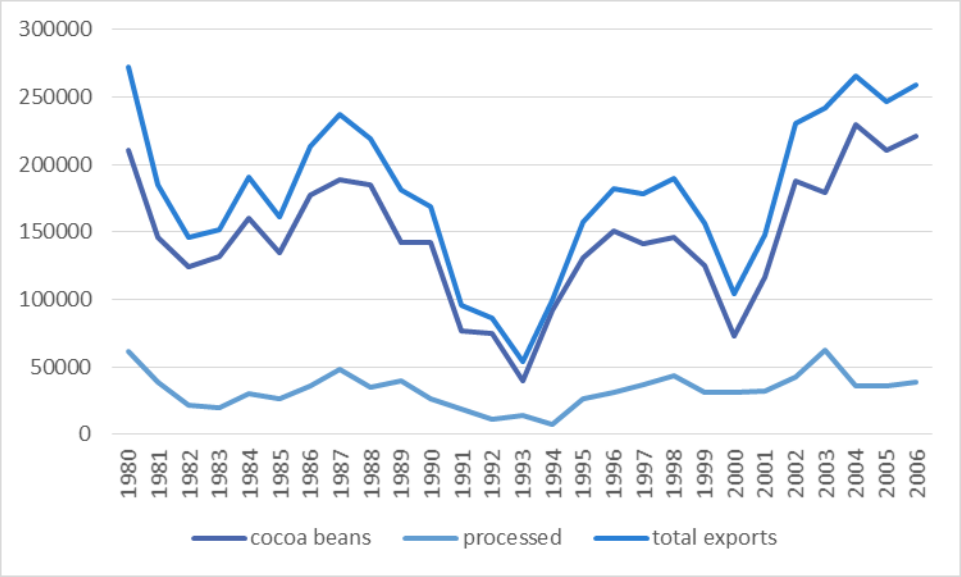

Figure 4.12: Share of cocoa beans and processed cocoa in the total cocoa export of Cameroon in tons

Source: FAO (2016)

4.5 The Cameroon cocoa value chain

There are about two million small-scale cocoa farmers in West Africa who are responsible for approximately 85% of the total cocoa output. Of these two million farmers, more than 1.6 million of them cultivate cocoa alongside other crops on an average farm size of 1 ha (Bagal, Belletti & Marescotti, 2013). Kaplinsky, Morris & Readman (2002) define a value chain as the full range of activities required to take a product from conception through the different stages of production to its final consumers. The VCA framework, together with traditional industrial organisation models, provides a means through which issues of strategic behaviour and market power can be satisfactorily addressed (Traoré, 2009). The study measured the competitiveness of the various value adding processes of cocoa in order to have a better understanding of the competitive performance of the industry. Given the importance of value-chain analysis in addressing competitiveness it is vital that an analysis of the Cameroon value chain is done.

The cocoa value chain - unlike other chains - is more complex than that of other cash crops such as coffee because chocolate, which is the end product, makes use of other raw materials such as sugar and milk. The cocoa value chain comprises various stakeholders or actors each of which have distinctive responsibilities to enable the smooth flow of activities. These stakeholders include: input/service providers, producers, licensed buying agents (LBA), traders and exporters, and processors. Figure 4.13 illustrates a simple representation of the Cameroon cocoa value chain with a brief description of the various activities following below.

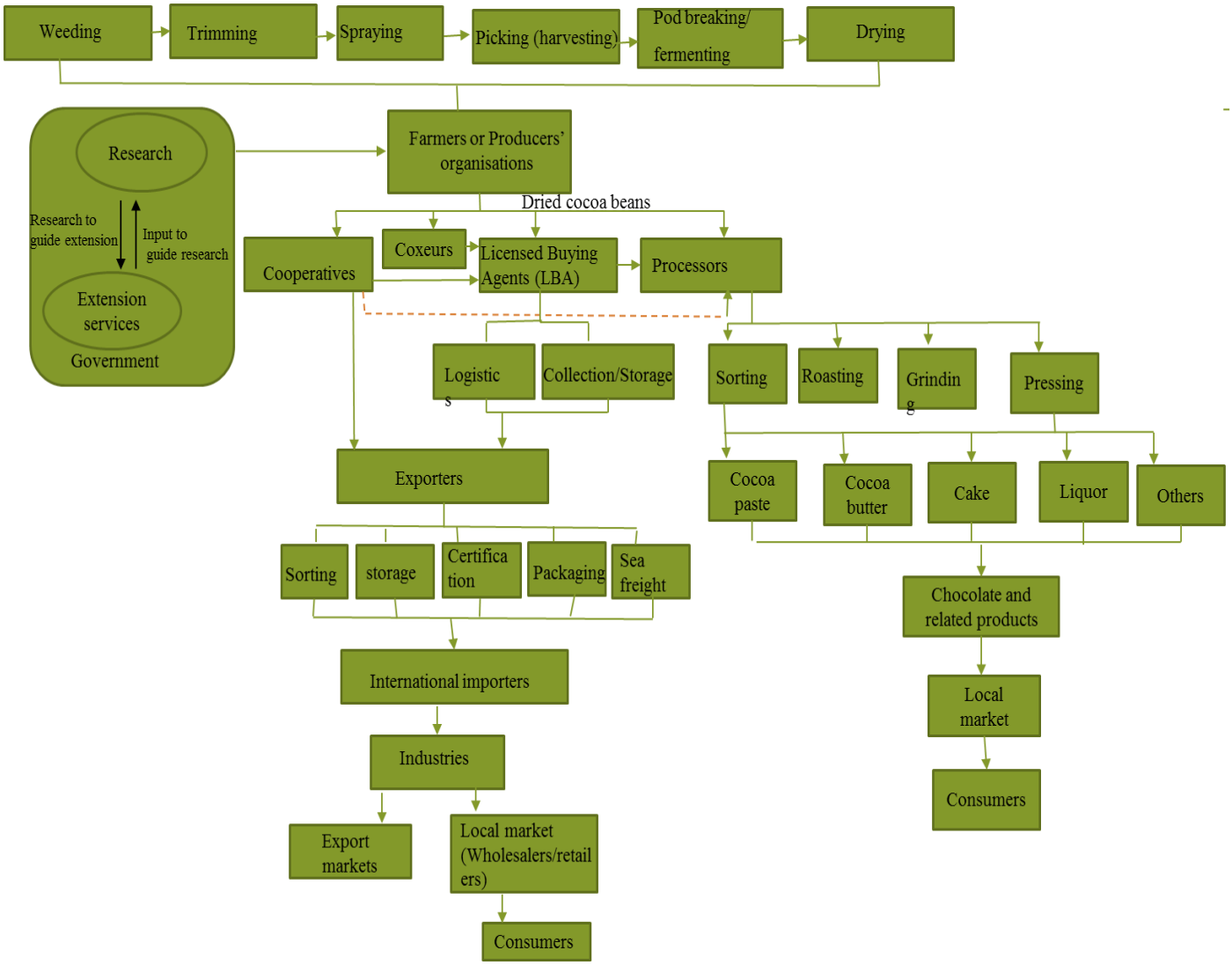

Figure 4.13: Cameroon cocoa value chain

Source: Author's own construction based on data from KIT (2010) and Dada (2009)

Production: The supply of inputs for cocoa in post-liberalization Cameroon is mostly in the hands of the private sector but the government is beginning to subsidise inputs (though very minimal) in line with its strategy to increase output. The farmers primarily purchase their inputs (pesticides, fertilizers, insecticides, etc.) which are always very expensive through agrochemical marketing chains. The farmers are responsible for ensuring that there is an all-year supply of cocoa beans through a year round production. Cocoa production is carried out by three sets of farmers. Smallholders with farm sizes of less than 5 ha (about 65% producing about 80% of the total production of the region characterised by low level of investment and production intensity), medium-size farmers who own between 5 to 15 ha of land and engage in capital investment and production intensity slightly higher than that of the smallholders. This set makes up about 30% of cocoa farmers. Large scale cocoa growers who own land portions of more than 15 ha are generally limited making up only about 5% of the cocoa growing population. These types of farms generally have a higher level of investment and production intensity

(KIT, 2010). The exact percentage of cocoa produced by the various categories of farmers could not be found and will therefore need further investigation.

The activities before the cocoa is mature enough include nursing, transplanting, weeding, trimming (pruning) and spraying of the cocoa (to fight against pests and diseases), harvesting, fermenting and drying. According to PAN-UK (2001), fungal diseases affecting cocoa such as phytophthora sp and black and brown pod diseases could result in up to 40% loss in global production if not treated, while other more severe ones like capsid might cause an even greater loss of about 75%. It is therefore very necessary that farmers treat their cocoa to avoid such losses. When the cocoa pods are ripe, they are harvested and broken with the beans removed and left to ferment for about 3-6 days usually in bags or covered with plantain leaves. The fermentation procedure involves mixing the beans every 48 hours and the duration depends on the producer. This process is very vital as it is responsible for the flavour in chocolate however, due to high rate of poverty and the need to make money fast to meet up with daily needs, some farmers do not ferment their cocoa for the right duration resulting in low quality. After fermentation, which usually takes place under shades in the farm, the cocoa is then transported to the villages and dried in ovens or under direct sunlight. It is worth noting that the men mostly carry out pre-harvest activities while post-harvest activities such as harvesting and pod breaking are mostly women and children. The women usually organise themselves into "mutual groups" which are designed to facilitate production and sales of cocoa. Once the cocoa is dried, the farmers or producer organisations can organise periodic markets in conjunction with the various buyers and with the support of administrative authorities who inform the various actors of the price of cocoa in the world market. However, the cocoa is sold at a price negotiated between the producers and the buyers (Bagal, Belletti & Marescotti, 2012).

Intermediaries and exporters: The intermediaries represent the LBA and cooperatives. The cooperative societies collect the products of its members and sometimes buy cocoa from non-members and sells to the exporters or processors. This channel is used only in the Centre region accounting for 44% of transactions and 48% of volume (Kandem et al., 2010). The licensed buying agents on the other hand, buy directly from the farmers or producer organisations to sell to the exporters and/or processors. Direct trade between the LBA and the producers is often difficult because most of them are based in the towns and the poor road infrastructure makes the transportation of cocoa difficult. Kandem et al. (2010) however noted that this method is only used by large scale cocoa producers and is responsible for only 5% of transactions in the Centre region but go up to 53% of transactions and 59% volume in the South West region. Another channel of trade is through the "middlemen" otherwise known as coxeurs. The middlemen are cocoa buyers who own stores in cocoa-producing communities; they buy the cocoa from the farmers and resell to the LBA. This channel strongly exists in the South West and Centre regions. These two regions have about 1 000 coxeurs and 35 LBA (Kandem et al., 2010). Prior to exportation,

the NCCB carries out quality checks and certification at the port in Douala, to ensure that the cocoa complies with the set phytosanitary and health standards of the importers, particularly the EU. There are about 11 exporting companies but the main exporting companies responsible for over 70% of cocoa exports are Telcar Cocao Ltd. (which exported 58,486 tons), Olam-Cam (30,294 tons), Cameroon Marketing Commodities (CAMACO) with 25,757 tons and Ets. Ndongo Essomba with 17,722 tonnes and a few small companies responsible for the rest in the 2014/2015 season (NCCB, 2016).

Processors: As mentioned earlier Cameroon processes a minimal portion of its production and this is in the hands of a few processing units. These units process cocoa beans into four intermediary products; cocoa butter, liquor, cocoa powder and cake before combining them with others for the production of chocolate and related products for both domestic consumption and sale in neighbouring countries. Cocoa powder for example, is used as flour in the confectionary and beverage industry while the butter is used mainly for chocolate manufacturing but can to a lesser extent be used for soap and cosmetics. There are only three main companies processing cocoa locally, namely Chocolaterie Confiserie du Cameroun (CHOCOCAM), a subsidiary of South Africa's Tiger Brands; Sic-Cacaos, a subsidiary of Switzerland's Barry Callebaut and Morocco's Compagnie Chérifienne de Chocolaterie. These three processors process about 15% of the total cocoa output from Cameroon. The government of Cameroon plans to open up another processing unit to increase processing as well as create more jobs for the unemployed population.

The above value chain does not function in isolation; it is often influenced by external factors and institutions that cannot be neglected. Such institutions or actors include transporters who transport cocoa from the collection points to the exporters' warehouses and consequently the ports. Their role cannot be overstated enough given the poor road infrastructure of the producing areas and country as a whole. Research institutions also exist that provide extension services such as MINADER and the IITA. The *Usinage Café et Cacao* (USICAM) is also an important contributor to the chain. This plant, being the biggest in the country, is responsible for the drying, cleaning, grading, storing and securing the quality of cocoa prior to exportation. Only CHOCOCAM responded to the questionnaires for this study.

4.6 Conclusions

The aim of this chapter was to give a general overview of the global production, demand and marketing of cocoa. Cameroon is the fifth largest producer of cocoa in the world after Cote d'Ivoire. A historical background of the evolution of the cocoa industry showed major structural changes in the sector, most of which were negative. The sector is gradually recovering from these setbacks. The cocoa value chain was also discussed in this section to provide a general knowledge of the various actors involved in the industry. Most of the cocoa produced is done by small-scale farmers who farm on farmlands of less than 5 ha. The farmers either sell their products through cooperatives who then sell to the license buying

agents and exporters or they sell directly to the license buying agents. The licensed buying agents buy the cocoa and sell to the exporters in Douala. There are about 11 different cocoa exporting companies but the main exporting companies exporting about 70% of the total cocoa exports of Cameroon are Telcar Cocoa Ltd, Olam-Cam, Cameroon Marketing Commodities (CAMACO) and Ets. Ndongo Essomba. There are three main processing units in the country processing about 15 % of the country's cocoa output. The country intends to increase its processing capacity by opening new processing plants.

CHAPTER FIVE: RESULTS AND FINDINGS

5.1 Introduction

This chapter will the results and analysis of the first four steps of the five-step framework. It measures and describes the competitiveness trends of the cocoa industry of Cameroon using Relative Trade Advantage (RTA) values based on trade data from ITC and FAO as well as the Porter Diamond determinants of competitiveness based on information obtained from the CES, based on views of selected role players in the cocoa value chain. The relationships between such determinants and related variables were also analysed.

5.2 Defining competitiveness (Step 1)

In this study competitiveness is defined as the ability of the cocoa industry of Cameroon to successfully trade its products in both domestic and international markets on a sustainable basis and attract scarce resources such as land, labour, technology, management talents and capital from other competing economic activities while earning at least the opportunity costs of returns on resources employed (Freebairn, 1986). This definition caters for the practise that the major value of cacao is earned on the international market and set the frame for a comprehensive measurement and analysis of the competitive performance of the industry – steps 2 to 5.

5.3 Measuring competitiveness (Step 2)

The growth and survival of a firm or industry depends on its ability to compete successfully in the business environment in which it operates. This step measures and analyses the competitiveness performance trends of the cocoa industry from Cameroon from 1961 to date. As mentioned in chapter three above the technique used to measure the competitiveness of the cocoa industry of Cameroon in this study is the Relative Trade Advantage (RTA). In the analysis of the competitiveness trends of the industry, data from both ITC and FAO were used. The ITC only provides data from 2001 to date while the FAO provides data from 1961 to 2013.

5.3.1 Relative Trade Advantage (RTA) calculations

Refer to chapter two section 2.4.2.1 for a detailed description and formula for RTA. Table 5.1 shows the trends in the RTA values of the competitiveness performance of the Cameroonian cocoa industry based on data from FAOSTAT (FAO, 2016) and Trademap (ITC, 2016). As mentioned in chapter three, these data sets represent the agriculture based competitiveness index and the multi-sector based competitiveness index respectively. Results reveal a positive trend of competitiveness of the cocoa industry with all figures having values above zero with RTA values ranging from 10-50 for the agriculture based competitiveness (agricultural FAO data base) and from 46 to as high as 204 for the

multi-sector based competitiveness (ITC data base). These are indicated in table 5.1 and 5.2 below.

Table 5.4: RTA calculations for Cameroon cocoa industry (FAO)

Years	1961	1962	1963	1964	1965	1966	1967	1968	1968	1970	1971	1972
Cam cocoa (FAO)	**33.78**	**37.28**	**41.83**	**28.98**	**31.68**	**30.93**	**31.83**	**32.38**	**41.25**	**29.95**	**33.11**	**35.13**
Years	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Cam cocoa (FAO)	**39.67**	**39.67**	**40.75**	**25.76**	**20.35**	**25.48**	**24.88**	**26.90**	**30.83**	**27.58**	**24.60**	**24.46**
Years	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Cam cocoa (FAO)	**16.85**	**16.07**	**26.78**	**29.71**	**16.11**	**17.86**	**16.37**	**13.44**	**10.90**	**12.34**	**14.07**	**14.30**
Years	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Cam cocoa (FAO)	**22.14**	**27.16**	**17.39**	**14.90**	**18.85**	**27.76**	**20.44**	**20.15**	**21.20**	**24.04**	**21.91**	**40.16**
Year	2009	2010	2011	2012	2013							
	49.77	**49.40**	**37.69**	**29.77**	**28.13**							

The ITC values in Table 5.2 below are different because cocoa was compared with a wider range of export products (5 300) other than just agricultural exports, as in the FAO (400 agricultural product lines). From the viewpoint of the chosen definition above, the ITC database describes a more accurate picture of competitive performance as a wider opportunity cost base is accommodated. The higher RTA values from the ITC, as compared to the FAO, are consistent with the findings of Boonzaaier (2015) whose results showed higher RTA competitiveness values for the ITC compared to the FAO for the South African stone fruit industry. However, research conducted by Angala (2015) on the competitive performance of the Namibian date fruit industry showed higher RTA values for FAO compared to the ITC.

Table 5.2 RTA calculations for the Cameroon cocoa industry (ITC)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cam cocoa (FAO)	**46.72**	**64.99**	**50.28**	**55.34**	**54.70**	**41.28**	**33.93**	**134.94**	**204.22**	**91.10**	**169.61**	**54.23**	**52.01**	**57.27**	**94.81**

Source: Author's own calculations based on data from FAO (2016) and ITC (2016)

Note should be taken that the sustained and high competitiveness values can be attributed to the fact that Cameroon is considered as a strong player in the global market, with a large proportion of the total cocoa exports in the global market - ranking it the fifth largest exporter. The fluctuating nature of performance – lowest at RTA = 10.9 in 1993 (FAO); highest at RTA= 49.77 in 2009 (FAO) and 204.77

(ITC,) - in Fig 5.1, indicates a global trade pattern affected by many factors affecting competitive performance. However, the general performance of the Cameroon industry rates high and sustained.

5.3.2 Trends in the competitive performance of the Cameroonian cocoa industry

Variations in the performance of the industry over the years depict different phases of competitiveness. A literature review from articles such as Achancho (2013, Traoré (2007) & BIC (2016) and telephonic discussions with key stakeholders on such fluctuations and trends led to the identification of four phases of competitiveness since 1961 as shown in figure 5.1. Here the similar trends in FAO and ITC data must be taken into consideration, despite big differences in certain years in actual values such as RTA (FAO) of 44.77 in 2009 vs RTA (ITC) of 204.22.

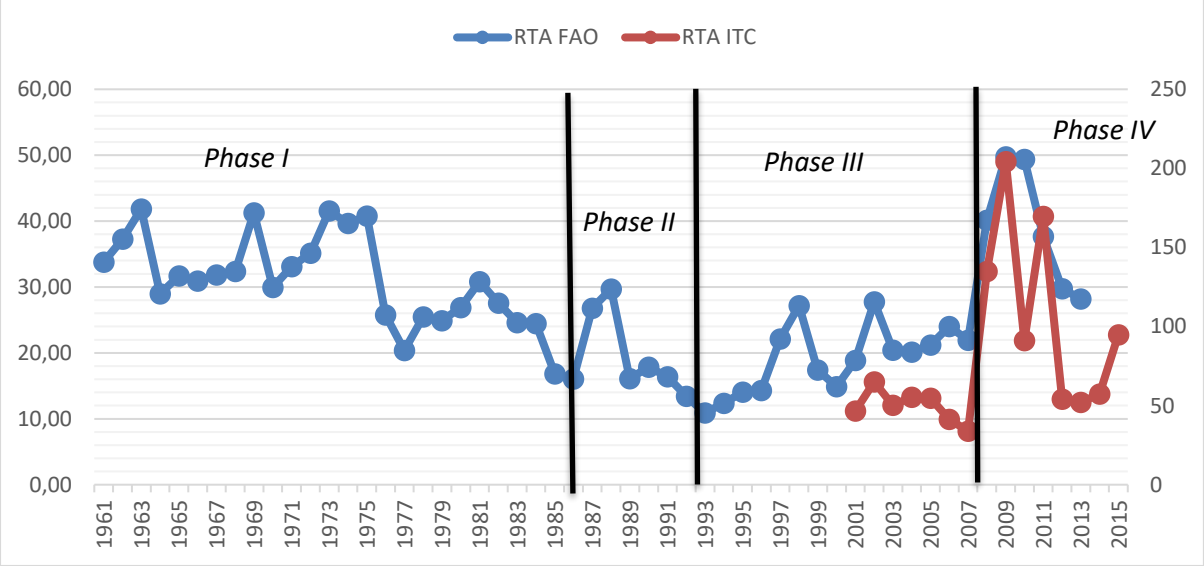

Figure 5.11: Phases of competitiveness of the Cameroonian cocoa industry

Source: Author's own construction with data from FAO (2016) and ITC (2016)

- Phase I: Centrally regulated period (1960-1986)
- Phase II: Economic crises period (1987- 1993)
- Phase III: Recovering period; the new Agricultural Policy (1994- 2007)
- Phase IV: Increased competition in the global market (2008 onwards)

Phase I - Centrally regulated period (Post-colonial period - 1961 to 1986): This phase shows a positive albeit fluctuating and gradually declining competitive performance of the cocoa industry. It marked the post-colonial period and the independence of the country when the government took active involvement in the agricultural sector. It was also during this phase that the country implemented a series of five-year development plans as instruments to promote nation building and economic development. These

different plans were put in place running from 1960-1965, 1966-1971, 1971-1976, 1976-1981 and 1981-1986 respectively (Ndongko, 1974; Amin, 2013; National Human development report, 2013). The economy typically promoted export and industrial crops during this period to earn foreign exchange earnings and contribute to the improvement of rural living conditions. Agricultural production and exports witnessed a gradual increase during this phase as shown in sections 4.4 and 4.5 in chapter four. During this period, the economy performed well with agriculture playing a pivotal role in the economy from 1961 to the early 1970s making the country highly dependent on agricultural exports of which cocoa topped the list. The state entirely controlled and managed the sector through the distribution of marketing inputs and the creation of agricultural marketing and funding agencies such as the National Product Marketing Board (NPMB) otherwise known as the ONCPB National Fund for Rural Development (FONADER) and the Development Mission for Food Products (MIDEVIV) (National Human development report, 2013). This phase can generally be described as a brisk economic period, a period during which growth was redistributed (National Human development report, 2013).

The ONCPB acted as a monopoly with the sole responsibility of setting up prices, exporting cocoa, providing of funding for research and extension services, etc. through development companies, cooperatives, projects and the media. After a period of growth, the economy witnessed a sharp fall in agricultural growth with the advent of crude oil exploitation in the early 1970s marking a drop in cocoa competitiveness. The fall was however significant between 1975 and 1977 due to the fuel and dollar crisis. Competitiveness index generally witnessed a drop during this first phase from 33.78 in 1961 to an index of 16.07 in 1986 for RTA (FAO).

Phase II - Economic crises period (1987- 1993): this marked the beginning of the economic crisis period and cocoa market liberalisation. In 1985, the country experienced an economic recession leading to a decline in export earnings from major agricultural crops like cocoa and coffee. The competitive performance of the cacao industry shows a pronounced decline to a low RTA value of 10.9 after an initial high of 29.7 in 1989. The agricultural sector growth did not only slow down during this period but was highly variable. The economy experienced a drastic reduction in GDP by 6.3% per annum. The sudden drop in competitiveness during this period resulted from the low prices of export crops like cocoa in the international market, distorted agricultural and macro-economic policies, the over-priced US dollar to which exports are tied and corruption to name a few. This resulted in the failure of the agricultural credit policy and the collapse of FONADER. Cocoa output declined at a rate of 1.13% (refer to section 4.4). In a bid to cope with these challenges, the government introduced a new phase of agricultural sector reforms such as the SALs of the IMF and the World Bank. These policies advocated for the disengagement of the government as the main actor in the cocoa sector, reduction in government funding on agriculture and the liberalisation of the sector characterised by gradual reduction of non-tariff barriers, privatisation and deregulation of prices. Despite the efforts undertaken by the government to strengthen the agricultural sector, production potential remained underutilized. It was therefore

necessary for the government to embark on other policies geared towards competitiveness requirements and adapt to external shocks on commodities; thus the implementation of the New Agricultural Policy (Madeley, 1987; Bamou & Masters, 2007; Debrew & Battisti, 2008; Achancho, 2006).

Phase III - Recovering period; the new Agricultural Policy (1994- 2007): this phase saw the introduction of the new agricultural policy, which focused on deregulation and privatization measures to improve the efficiency of resource allocation, find more efficient management practices and the privatisation of parastatals. This policy intended to modernise production equipment, promote and diversify export, develop agricultural products processing and balance supply chains. It encouraged the formation of professional organisations such as the CICC which is an important partner in the development of the cocoa sector, the implementation of new approaches to agricultural extension that make use of research, extension and other agricultural stakeholders and the development of decentralized micro finance systems which could provide funding to the farmers in the rural areas. The overall effect of this policy coined with the 1994 devaluation of the national currency (francs CFA) resulted in increased competitiveness in the domestic sector as well as substantial growth recovery in the cocoa, coffee, rubber and banana sectors. Although this phase marked increase in competitiveness and recovery growth of some sectors such as the cocoa sector, the results were below expectations for most food products due to internal market malfunctions that affected the domestic products' competitiveness. Other challenges that plagued the economy were the low level of domestic FDI in the agricultural sector and the absence of an institutional framework suitable for the new development policy, lack of funding and lack of support to producers. This led to the development of the rural sector strategy document in 2003 in which the government set production goals it aims to achieve in various sectors such as the cocoa, coffee, oil seeds, vegetables and fruits. (Achancho, 2006).

*Phase IV - Increased global competition and fluctuating markets (2008 onward*s): This phase runs from 2008 to present. Under this phase the cocoa has undertaken various projects to increase production and overall competitiveness in an ever increasing competitive global market, especially since 2013 (refer to chapter 4 section 4.3.4 and also 5.3.3 below). The sector however experienced a drop in the competitiveness index in 2012 and 2013 due to the rejection of about 2 000 tons of cocoa beans by the EU and the adverse weather conditions characterised by a prolonged dry season in 2013. Exports of cocoa in the global market also experienced a drop for these two years (FAO, 2016).

From the trend analysis, it can be concluded that the industry exhibits positive competitive advantage although the trend of competitiveness is unstable and tends to fluctuate due to varying quality of Cameroonian cocoa, inter alia many new entrants in to the Cameroon market and a lack of quality control regulations.

5.3.3 Comparison of Cameroonian competitive performance with other cocoa producing countries

The aim of the study was to analyse the competitive performance of the cocoa industry of Cameroon within the global environment. To achieve this it was also important that the competitive performance of Cameroon be analysed relative to that of other major cocoa producing countries. This will provide an overview of how competitive the Cameroonian cocoa industry is in the global environment. The RTA formula allows for such comparisons of competitiveness between countries because it is a ratio that measures the exports and imports of a country relative to what the world exports and imports in terms of cocoa. ITC data was used to measure the competitive performance of some of the most important - benchmarking - countries. ITC data was used as this give a more comprehensive picture, in particular as different countries have different economic structures, i.e. when not all competitors are agricultural led economies.

Cote d'Ivoire and Ghana are the two largest producers of cocoa in the world. Cameroon's major competitors are Cote d'Ivoire and Ghana. Some of the cocoa producing countries such as Ghana have experienced fluctuations in their performance over the years. Dormon *et al.,* (2004) state that although Ghana is the one of the main producers of cocoa in the world, production has however declined over the years since the mid-1960s reaching its lowest in 1983 and then increased again from the mid-1980s. This decline in production over the years is partly as a result of decreasing areas under cultivation and low yields due to the incidence of pests and diseases. In addition, Monastyrnaya *et al.* (2016) have attributed the fluctuation in performance of the Ghanaian cocoa industry, as is the case with Cameroon, to the challenging environment in which the cocoa industry operates where factors relating to climate change, social insecurities and economic instability (price shocks have a negative impact on the functioning of the cocoa industry). The general trend also shows an increasingly competitive environment since 2013.

Figure 5.2 shows the competitiveness of the Cameroonian cocoa industry relative to its competitors; all countries shows fluctuations in performance levels.

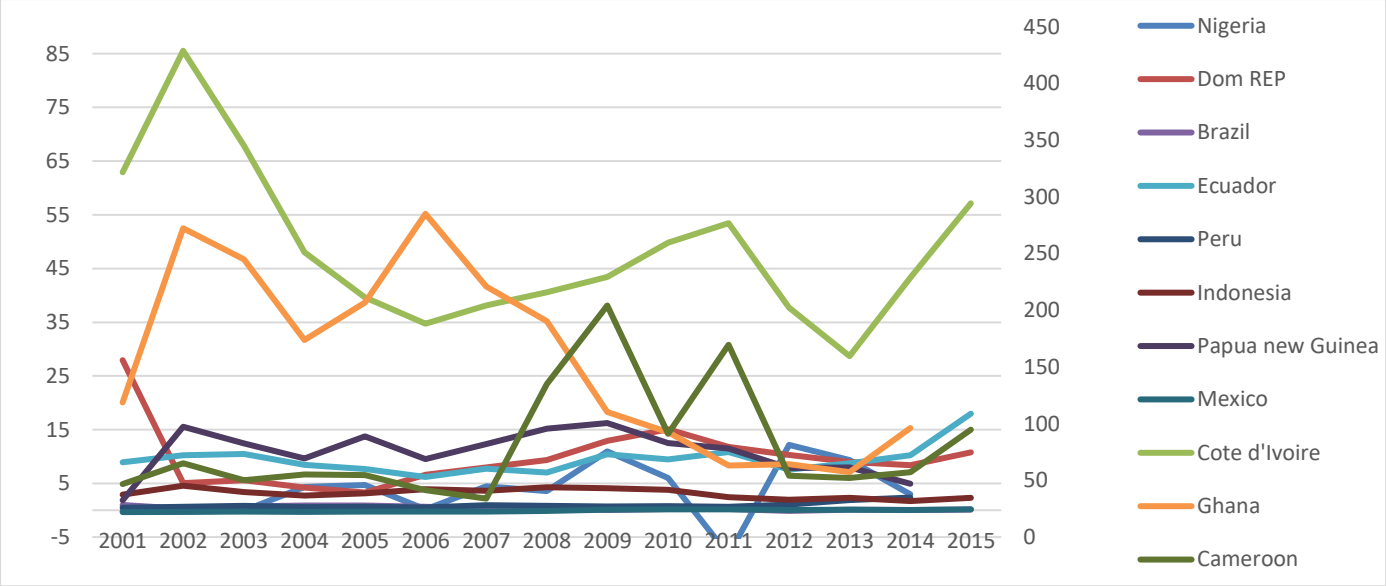

Figure 5.12: Comparison of Cameroon with other major cocoa producing countries

Right axis indicates RTA values for Cameroon, Cote d'Ivoire and Ghana; the rest on the left axis

Source: (own calculations from ITC (2016) data)

5.3.4 Comparison of cocoa with other major edible agricultural exports

To establish a comprehensive view on competitive performance, RTA values of cocoa were compared to two other major edible agricultural products in Cameroon; coffee and banana. In 2014 exports of banana amounted to $315million while the value of the total coffee exports was $53.8. Both products accounted for 5.2% and 0.9% of the total exports from the country respectively (ITC, 2016). A comparison of cocoa with the other two major agricultural exports was necessary to determine its performance in relation to other major edible agricultural products within the period under study. As depicted in figure 5.4, cocoa has maintained a dominant competitive position against the two other products for most of the years. This dominant competitive position can partly be attributed to the fact that cocoa trees have a longer life span than crops like banana that need to be planted every year. Coffee on the other hand was more competitive than banana from the mid-1960s up to 1994 but the latter has become more competitive since then and even surpassed cocoa in 2013. This can be attributed to the rejection of 2 000 tons of cocoa by the EU countered by an increase in the global banana market with increased production and exports for that year.

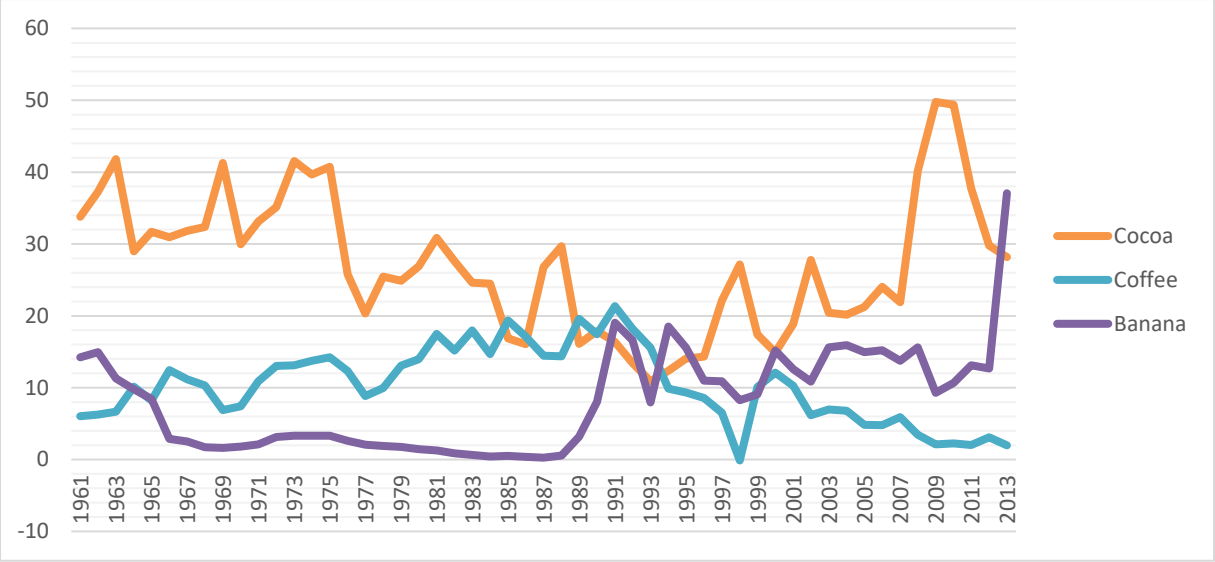

Figure 5.13: Comparison of cocoa, banana and coffee

Source: FAO (2016)

5.3.5 Measuring competitiveness in the Cameroon cocoa value chain

The above analysis viewed cocoa as an industry combining all the different value-adding processes such as cocoa beans, cocoa butter, paste, powder and cake, and chocolate and related products. This section will now focus on the different value-adding activities in the value chain to determine which is more competitive. The figure 5.4 below illustrates the RTA values for the various value adding activities.

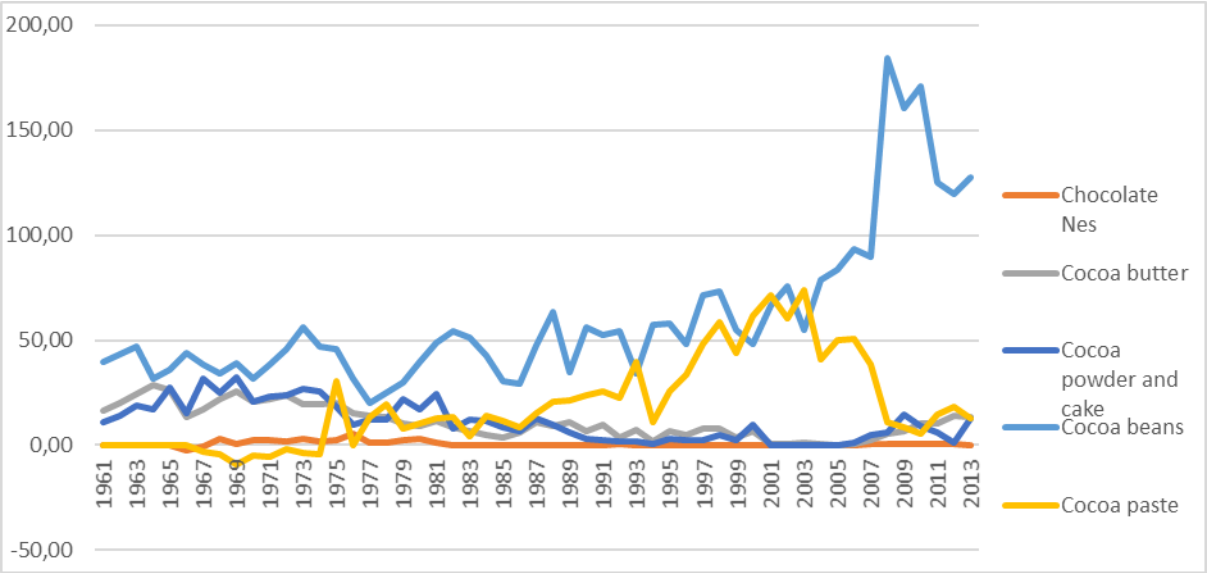

Figure 5.14: RTA for various value-adding processes

Source: FA0 (2016)

The figure reveals that primary produced cocoa beans have been the most competitive for most of the years except for the years 1993, 2000 and 2001 where cocoa paste was marginally more competitive. Cocoa powder is more competitive than cocoa butter. Cocoa butter is less competitive particularly due to the low butter content of cocoa from Cameroon making it easy to blend with beans from other countries. For this reason, cocoa beans are priced more in the powder form rather than for the manufacture of cocoa butter (Gilbert & Tollens, 2002. Chocolate is the least competitive with RTA values ranging from -2.55 to 5.3. The sector has been uncompetitive for most of the years except the periods 1968 and 1970-1981 during which it was marginally competitive. The low level of competitiveness is due partly to the low manufacturing capacity and "chocolate making" skills of the country. There are also only three processing units in the country. Currently, this performance - chocolate production - impacts negatively on the competitiveness performance of the Cameroon cocoa industry and will need some improvement for such domestic value adding to be performed in a competitive manner. Strategies geared towards improving the competitiveness of the chocolate value adding processes could lead to an increase in local chocolate trade and thus the overall improvement in the industry's competitiveness. The priority of such investments will however have to be considered in a broader strategic context.

5.4 Factors influencing the competitive performance of the Cameroonian cocoa: the cocoa executive survey (CES) (step 3)

The above sections analysed the competitive performance of the industry in relation to trade values over time and the results reveal that the cocoa industry of Cameroon is performing at a high sustained but fluctuating level of competitiveness and can aspire to improve its performance. The next step discussed in this section deals with the information needed to support such decision making and involves how such information, collected during the CES supported by the views and opinions from executive leaders and experts, was used to identify the various factors that influence the performance of the industry both positively and negatively. It is worth noting that information was gathered throughout the value chain, i.e. from different role players and functions. No separate or individual sets of information for the different value adding processes referred to above could be obtained, namely cocoa beans, butter, paste, powder and chocolate activities as separate sets. It was however possible to separate and analyse the views of the major different stakeholders/players in the value chain. The purposive sampling (a non-probability method of sampling) was used to distribute the questionnaires where only participants who could fully comprehend and answer the questions were involved in the survey.

5.4.1 Descriptive analysis

The first section of the questionnaire pertaining to the demography of the CES respondents; the different crop types, position in the value chain (producer, pack house or processor, exporter and advisor/ service

provider), area harvested, value of cocoa exported and the percentage of resources spent on cocoa operations is represented in table 5.3. The essence of this table is to clarify the nature of the respondents.

Table 5.5: Descriptive statistics of the cocoa executive survey

Geographical region (South West Region)	Number surveyed	Percentage n=65
Muyuka (Bafia)	13	20%
Munyenge	4	6%
Kumba	18	28%
Ikiliwindi	5	8%
Mbonge	12	18%
Konye	11	17%
Douala	2	3%

Crop type	Number surveyed	Percentage n=65
Cocoa beans	63	97%
Processed cocoa	2	3%

Position in the value chain	Number surveyed	Percentage n=65
Producer	51	78%
Pack house or processor	2	3%
Exporter	2	3%
Input/service provider	10	16%

Farm size (producers)	Number surveyed	Percentage n =51
< 5 ha	30	59%
6-10ha	17	335
11-15ha	4	8%

Source: CES (2016)

The two processing companies that were contacted process 50 to 100 tons and 100-500 tons of cocoa annually, whereas the two exporting companies exported more than 1 000 tons of cocoa annually. It is evident from the table above that most of the respondents were only involved with cocoa beans. In addition, most of the producers grow cocoa on a piece of land that is less than 5 ha.

5.4.2 Identifying the factors that enhance and constrain the competiveness of the cocoa industry

Seventy-two factors were identified through the CES. The level of international market competition was identified as the most enhancing factor of competitiveness rating; 4.5 out of 5. The most constraining factor on the other hand was high transaction cost; 1.5 out of 5. Obtaining short-term credit and the relatively low technology status of the Cameroon cocoa economy, followed as constraining factors.

A bench-marking rank of 2.5 was considered, where factors ranked above 2.5 were considered enhancing while those ranking below 2.5 were constraining. The general results from the survey revealed that 55.6% of these factors were constraining factors while 44.4% were enhancing factors. This indicates that stakeholders in general do not view the general environment as enhancing yet despite the relatively high competitive performance measurement (RTA values) for the cocoa industry of Cameroon. The low incidence of neutral responses (around 2.5) indicates the validity of the questionnaire and that most factors identified had a pronounced impact on competitive performance of the industry. The rating of all the 72 factors is illustrated in figure 5.5 below.

Value chain opinions: The opinions of the various stakeholders in the value chain were mapped (Fig 5.5) and further considered through a cluster analysis.

- **Cluster 1** represents the role players who deal with cocoa in its raw state; cocoa beans and involves the producers, exporters and those who provide direct support to production activities such as input and service providers and/or advisors - **cocoa agribusiness**.
- **Cluster 2** on the other hand contains those who are involved in the transformation of cocoa beans into semi-finished and finished products; the manufacturers of chocolate and related products - **cocoa processors**.
- The **General Industry** refers to the responses of all the stakeholders irrespective of their value chain positions.

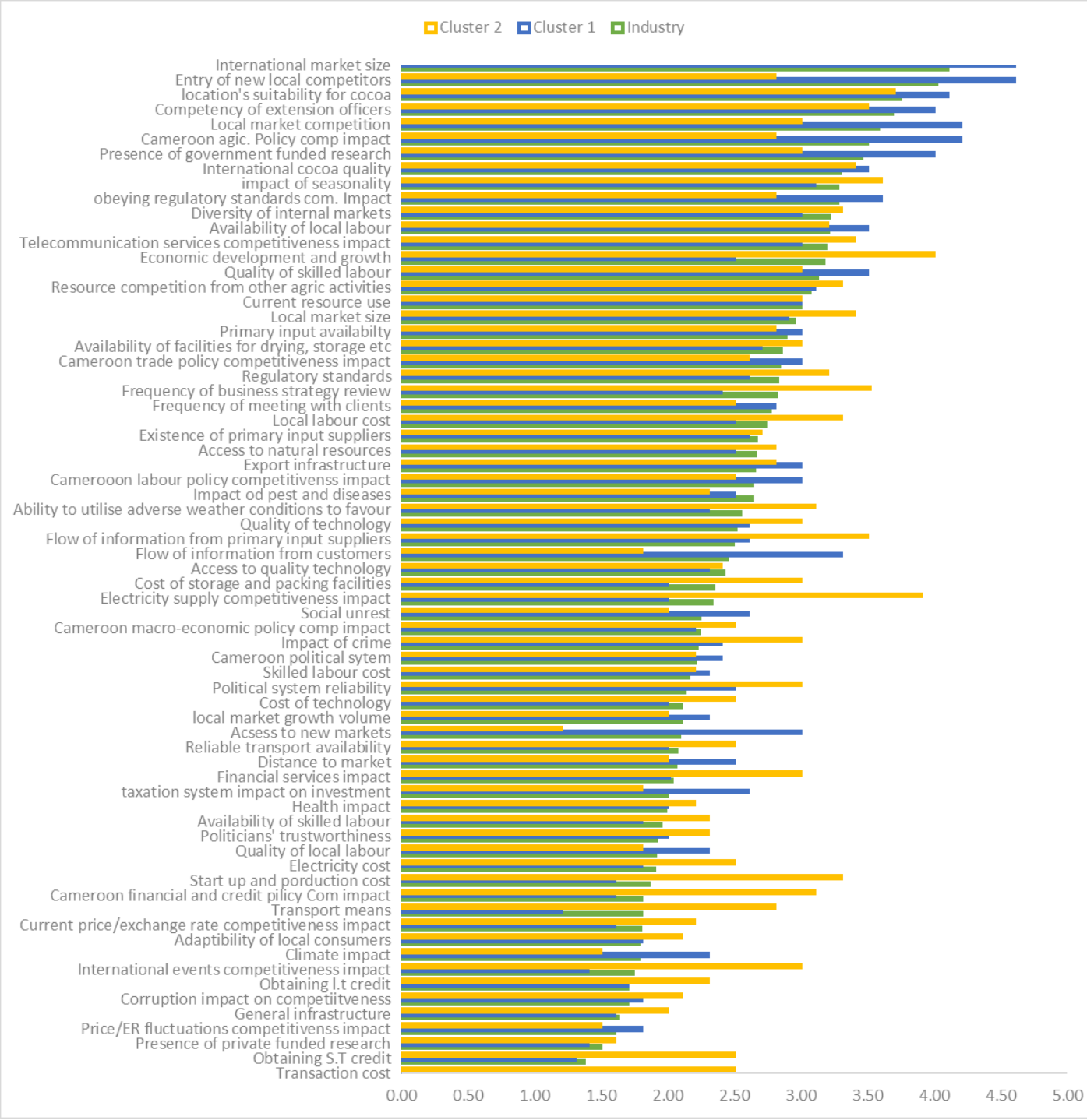

Figure 5.15: Rating of factors influencing the competitive performance of the Cameroonian cocoa industry

Sources: SPSS calculations based on CES (2016)

Cluster 1 =Cocoa agribusiness; Cluster 2 = Cocoa processors; General industry =Industry average

Table 5.4 shows the distribution of responses according to ratings while figure 5.5 shows the stakeholders ratings of the various factors affecting the competitiveness of the industry. Statistical comparisons of the mean rating score values of factors were done using one-way analysis of variance

(ANOVA) while the frequency distributions were done by Chi-square analyses. Although most of the factors of both clusters and the general industry have a negative impact on competitiveness, cluster 2 generally has more enhancing factors than its counterpart and the industry as a whole. It should be noted that the low incidence of the questions rated 2.5 (neutral or irrelevant) shows that all the questions asked were relevant to the industry.

Table 5.6: Rating of factors by various clusters

Rating of 72 factors	Cluster 1	Cluster 2	Industry
Ratings below 2.5	43.1%	29.2%	54.6%
Ratings at 2.5	6.9%	11.1%	0%
Ratings above 2.5	50%	59.7%	44.4%

Source: CES (2016)

Although the performance of both clusters is affected by a similar set of factors, Cluster 2 (Processing) is more buoyant and positive about the industry than cluster 1 (Agribusiness). This cluster tends to recover from shocks that affect the industry substantially faster than cluster 1. For example, internal marketing (responsible for purchases of cocoa from the villages), productivity level, quality of technology and the size of the local market received higher than average scores for this cluster due to improved management and planning, good access to information and sufficient financial capital. Cluster 1 on the other hand, is less optimistic about the performance of the industries because of the high dependency on income from cocoa, lack of planning and organizational skills as well as limited knowledge of efficient farming techniques. Another reason for this disparity may be the lack of divergence in cluster 1, given that many key activities such as quality control, internal marketing, research and governmental input and extension provision rely solely on the government.

5.4.2.1 Determining the top ten major enhancing and constraining factors of competitiveness-industry and value chain levels

Based on the ratings of the stakeholders the top ten most enhancing and constraining factors for the industry as a whole (table 5.5) and each cluster group (table 5.6) were identified.

Major enhancing factors: The factors with the most positive influence on the competitive performance of the cocoa industry of Cameroon are: international market competitiveness, international market size, entry of new local competitors, location's suitability for cocoa production, competency of extension workers, Cameroon's agricultural policy, presence of government funded research institutions, international cocoa quality, and the impact of seasonality. The firm and industry can handle most of the enhancing factors with the exception of the size of the international market and standards for international cocoa quality. To maintain and improve on the competitive performance of the industry, it is vital that these factors be regularly monitored and promoted within the industry's control.

Major constraining factors: This represents the list of factors that hinder the success of the cocoa industry and include transaction cost, obtaining short-term credit, the presence of privately funded research institutions, price and exchange rate fluctuations, general infrastructure, corruption, obtaining long-term credit, impact of international events, climate impact, and adaptability of local consumers to new products and processes. These factors can generally not be handled by a single firm but are manageable through industry action. There is therefore the need for increased coordination and collaboration at the inter-industry as well as industry-government levels. An illustration of the top ten constraining and enhancing factors including their mean ratings by industry stakeholders is represented in table 5.6

Table 5.7: Top ten constraining and enhancing factors of competiveness

Top 10 enhancing factors	Impact rating	Top 10 constraining factors	Impact rating
Competitiveness in the international market	4.5	Transaction cost	1.1
Size of the international market	4.1	Obtaining short-term credit	1.4
Entry of new local competitors	4.0	Presence of private funded research	1.5
Location's suitability for cocoa	3.8	Price/exchange rate fluctuations	1.6
Competency of extension workers	3.7	General infrastructure	1.6
Local market competition	3.6	Impact of corruption on competitiveness	1.7
Cameroon agricultural policy	3.5	Obtaining long-term credit	1.7
Availability of government-funded research	3.5	Impact of international events on competitiveness	1.7
International cocoa quality	3.3	Impact of climate	1.8
Impact of seasonality	3.3	Adaptability of local consumers to new products	1.8

Source: Own calculations from SPSS software (2016); CES (2016)
**Rating scores out of 5 Impact ratings*
**(1=Most constraining; …; 2.5=Neutral; …; 5=Most enhancing)*

Table 5.8: Most enhancing and constraining factors for the two value chain clusters

Cluster 1: Cocoa agribusiness		*Cluster 2: Cocoa processors*	
Top 10 most enhancing factors	Mean rating score	**Top 10 most enhancing factors**	**Mean rating score**
International market Competition	4.8	International market competition	4.20
Entry of new local Competitors	4.63	Economic growth and development	4
International market size	4.60	Electricity supply competitiveness impact	3.9
Cameroon agricultural policy	4.24	Location suitability for cocoa operations	3.73
Local market competition	4.2	Impact of seasonality	3.62
Location's suitable for cocoa operations	4.13	International market size	3.54
Competency of extension Officers	4.01	Competency of extension officers	3.53
Presence of government funded research	4	Flow of information from primary input suppliers	3.51
Obeying regulatory Standards	3.62	Frequency of reviewing business strategy	3.50
International cocoa Quality	3.54	International cocoa quality	3.44
Cluster 1: Cocoa agribusiness		*Cluster 2: Cocoa processors*	
Top 10 most constraining factors	Mean rating score	**Top 10 most constraining factors**	Mean rating score
Transport systems	1.22	Access to new markets	1.23
Transaction cost	1.3	Price/exchange rate fluctuations	1.5
Obtaining short- term credit	1.32	Climate impact	1.52
Presence of private funded research	1.43	Presence of private funded research	1.64
International shocks	1.45	Quality of local labour	1.80
General infrastructure	1.6	Taxation system impact on investment	1..82
Start-up and production cost	1.61	Flow of information from customers	1.84
Cameroon financial and credit policy	1.63	General infrastructure	2.0
Current price and exchange rate	164	Local market growth volume	2.03
Obtaining long-term credit	1.7	Distance to market	2.22

Source: Own calculations from SPSS software (2016); CES (2016)

**Rating scores out of 5*

** Impact ratings (1=Most constraining; …; 2.5=Neutral; …; 5=Most enhancing)*

Both clusters had five similar enhancing factors while the other five were particular to the individual clusters whereas on the constraining side there is a low level of alignment with only three factors similar to both clusters. The similar constraining and enhancing factors between the clusters have slightly different ratings. This indicates a medium level of alignment along the cocoa value chain indicating opportunities for improved collaboration between the actors. Cluster 1 actors saw financial and cost constraints for the competitive running of cocoa operations as the main limiting factors. Also international events and shocks tend to have a great influence the performance of cluster one for example because most of the cocoa produced is exported to the international market, a sudden fall in international cocoa prices or strict quality controls or requirements will negatively impact the cluster and industry's performance. Actors in Cluster 2 on the other hand were more concerned about the market, particularly the demand for Cameroonian chocolate and related products in the international market.

To improve upon the competitiveness of the industry it is vital that strong alignment be developed in the value chain. As clearly stated by Webber & Labaste (2010), gaining new markets without improving the business environment and competitiveness will result in low-value products. This applies clearly to the cocoa industry of Cameroon and needs to be achieved. Refer to section 6.3 for strategies to improve alignments.

The fluctuating performance of the Cameroon industry since 2008 may also be related to this observation; not sufficient quality controls to consistently ensure the required quality controls, especially from new entrants in the value chain, as requested by the international market.

As noted in chapter three, the relationship between the various factors affecting the industry's performance was also analysed. This analysis will be done in section 5.4.3 in terms of the Porter Diamond model where each factor will be viewed in terms of the determinant in which it is located and also the relationship between determinants to ease strategic information setting for strategic planning in chapter 6 (step 5).

5.4.3 The determinants of competitiveness in the Cameroonian cocoa industry (Step 4)

This step involves the application of the Porter Diamond model to clustering/grouping the 72 factors into six major determinants of competitiveness. A mean score for all the factors under the major determinants was obtained in order to determine how each determinant affects the competitiveness of the industry. Table 5.6 and Figure 5.6 illustrate the rating scores of the determinants.

Table 5.9: Overall rating of all determinants

Major determinant	Cluster 1	Cluster 2	General Industry
Firm strategy, structure, rivalry	3.02	3.16	3.04
Related and supporting industries	2.64	2.94	2.8
Government support and policy	2.65	2.61	2.62
Demand/market conditions	2.42	2.84	2.63
Production factor conditions	2.24	2.62	2.28
Chance factors	2.11	2.58	2.22

Source: Own calculations from SPSS software (2016); CES (2016) *Scores out of 5*
Impact rating (1 = Most constraining; …; 2.5 = Neutral; …; 5 = Most enhancing)

From the above analysis four of the determinants were observed to enhance the competitive performance of the industry having scores higher than 2.5. Firm strategy, structure and rivalry is the only determinant with a score higher than three (3) and thus the most enhancing determinant, while related and supporting industries, government support and market conditions registered score values of between 2.5 and 2.9. Production factor conditions and chance factors are viewed to marginally constrained the performance of the industry. This confirms the observation that the cocoa industry of Cameroon generally operates effectively from a competitiveness viewpoint. The interrelatedness of these determinants will be investigated further below.

Comparing the radar diagrams in figure 5.6 and from table 5.7, it is evident that both business clusters experienced similarities in their views and all agreed that the determinant firm strategy and structure has the most positive impact on competitiveness. The similarities observed in these views will support the idea of linking the value chain actors at industry-level decision-making. The ratings in cluster 1 are generally lower, or less optimistic, than in cluster 2, possibly because primary producers and agribusinesses tend to be more exposed to the primary risks of production and fluctuations in climate, raw material markets, etc. This can be viewed as depicting the differing decision-making environments in which the respondents in each cluster are operating.

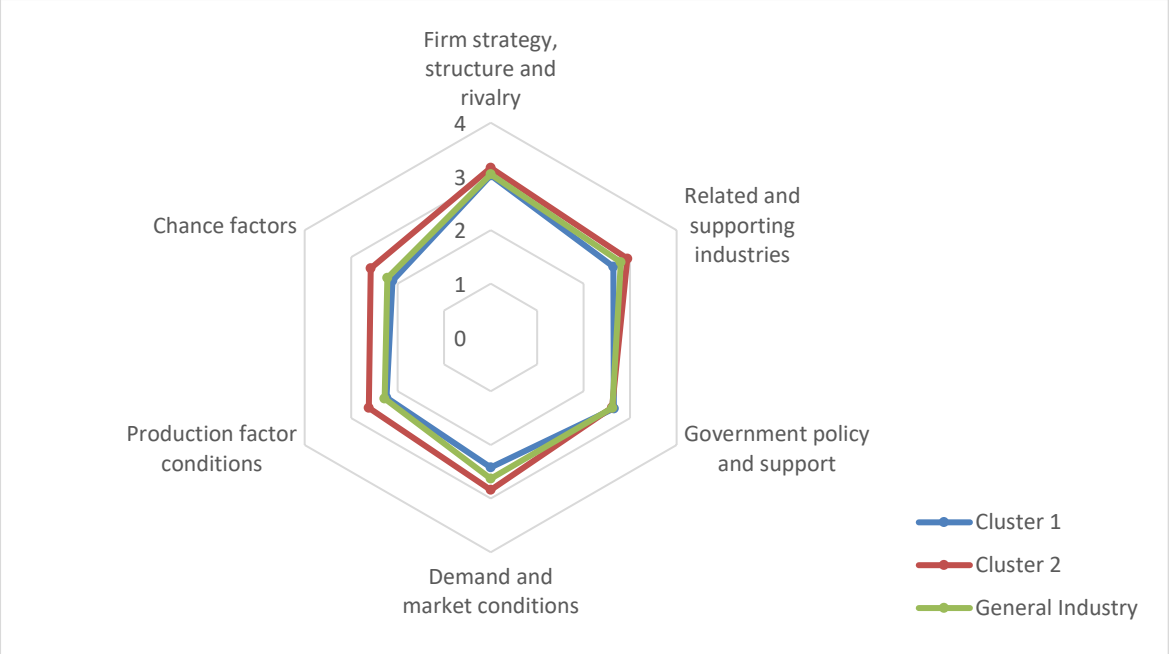

Figure 5.16: Major determinants of competitive performance of the Cameroonian cocoa industry

Source: CES (2016)

5.4.3.1 Relationships between the Porter Diamond model determinants

Analysis was conducted to determine whether the Porter Diamond determinants are operating in a coordinated and interrelated manner to influence the competitive performance of the industry or rather do so independently. The analysis was done through calculating the statistical significance between the different Porter Diamond determinants and their respective factors for the case of the general industry. The results are presented in table 5.8.

Independent determinants: The relationship between the chance determinant and production factors determinant are not statistically significant at the 95% confidence interval because they have a p-value of 0.45 which is greater than 0.05. This means that a chance factor such as exchange rate fluctuations does not directly affect production activity decisions in the short run, confirming the long-term nature of cocoa production being linked to fixed investments and capital infrastructure, with relatively limited short-run influences from fluctuating interest rates, exchange rates and related occurrences.

Supporting industries and industry structure, firm strategy and rivalry: A p-value of 0.06 was observed between the determinants describing supporting industries and firm strategy/industry structure and rivalry. This indicates that they are not statistically significant at the 95% confidence interval, meaning no significant direct interrelatedness between these two determinants. This may also imply that the

supply chain could be less efficient with no relationship between firm level strategies and those affecting supporting industries i.e. that these two value chain aspects operate in isolation while the one actually requires the other, i.e. there is restricted alignment in the cocoa value chain. Improvement of the performance will thus require a higher degree of alignment and coordination in the value chain.

Interrelated determinants: The other determinants, namely chance factors and demand and market conditions; chance and government support; production conditions and demand and market conditions; government support and related and supporting industries, had p-values that are lower than 0.05 hence have statistically significant positive relationships. This means that these determinants are interrelated and any efforts to change the impact of a particular determinant must be related to a possible influence of related determinants i.e. network interrelatedness.

From this analysis, it is clear that an integrated strategy, both at value chain and networking levels will be required in the Cameroon cocoa industry. Table 5.8 illustrates the independence and interrelationships between the various determinants.

Table 5.10: Comparison of statistical differences between the major determinants

LSD test variable effect Effect: determinant		
1st Determinant	**2nd Determinant**	**P-value**
Chance of opportunity	Production factor conditions	0.453992*
Chance of opportunity	Demand/market conditions	0.004131**
Chance of opportunity	Government support	0.000000**
Chance of opportunity	Supporting industries	0.000000**
Chance of opportunity	Firm strategy	0.000000**
Production factor conditions	Demand/market conditions	0.029499**
Production factor conditions	Government support	0.000001**
Production factor conditions	Supporting industries	0.000000**
Production factor conditions	Firm strategy	0.000000**
Demand/market factors	Governments support	0.004362**
Demand/market factors	Supporting industries	0.000000**

Demand/market factors	Firm strategy	0.000000**
Government support	Supporting industries	0.000086**
Government support	Firm strategy	0.000000**
Supporting industries	Firm strategy	0.060780*

Source: Own calculations from SPSS software (2016)
***p value <0.05 indicate no clear statistical significant difference between the two determinants implying interrelationships between the determinants*
**p value >0.05 indicate a difference between the two determinants; determinants are therefore viewed as independent (highlighted in red)*

In summary, in the case of chance factors, no direct impact is registered at production factor level, i.e. these two determinants are independent. This means that the impact of exchange rate changes in the industry for example, is rather transmitted over the long run to production level actions through the demand/market (trade), supporting industries (services and input costs) and the firm strategy determinants. This is also confirmed by the high interrelationships between demand factors, supporting industries and firm strategy determinants. The same applies to the government policy and support determinant and as well as all the other determinants; namely high interrelationship. In a like manner, no direct impact is recorded between supporting industries and firm strategy determinants; these determinants are independent. This implies that telecommunication services for example has no direct impact on the structure and strategy of firms but is rather transmitted to affect this determinant through the requirements of demand/market conditions or trade, government policy and support and production level actions.

5.4.4 Analysing each of the Porter diamond determinants

The preceding section gives a general view of the determinants of the competitive performance of the industry within the Porter framework, also of their interrelatedness. A detailed understanding of the industry will require an in-depth detailed analysis of the various factors and their relatedness within a particular determinant. In this section, the individual factors within each determinant will be considered, with the three most constraining and enhancing factors in each determinant to be discussed in detail.

5.4.4.1 Production factor conditions (CES rating of 3/5)

Production factor conditions are basic to the production process throughout the value chain. Twenty-three production factors were identified through the CES and rated by the participating stakeholders. Results revealed that 30.4% of the production factors were viewed to enhance the competitiveness of the industry having values higher than 2.5 while the rest were viewed as constraining factors. No neutral factors were identified.

The most enhancing factor was a natural endowment factor viz. the location's suitability for cocoa production with a CES rating of 3.8 or 70%. This implies that the locality/site of most of the areas involved in cocoa operations (growth and processing) favour the competitiveness of the industry. This study focused on the South West region of the country, which has characteristics such as fertile volcanic soils and humid climate which are favourable conditions for cocoa production. In addition, the exporters and manufacturers are situated in Douala, which is the economic capital of the country characterised by well established business, economic and industrial activities as well as a pool of skilled labour.

The second most enhancing factor is the availability of labour rated at a CES of 3.2 (64%). Cocoa is grown mostly in the rural areas, which often have limited job opportunities. Relatively high quality locals therefore are available for the cocoa sector as this being their main source of employment. It is also worth noting that rate of child labour in most cocoa producing communities is very high. This stems from the fact that children are obliged to help their parents on the cocoa farms and other cocoa related activities or work on the farms to raise income for their poor families. Respondents also noted that although unskilled labour is readily available the quality of the work performed actually constrained competitiveness. This is due primarily to the unstable nature of such supplies; individual labourers cannot be positioned to undergo skills development and training on cocoa operations due to their fluctuating availability and therefore lack the necessary skills as required.

The third enhancing factor is the quality of skilled or professional labour, which received a rating of CES of 3.1 (61%). The quality of work performed by skilled labour is regarded as relatively high, for example the extension workers involved in the production domain. These professional workers are deployed by the government to train cocoa operators on good cocoa practices and thereafter each worker is expected to submit reports upon completion of training session with farmers. In addition, to ensure that the professional workers are up-to-date in their knowledge of cocoa practices and operations, the government organises training for them from time to time. Note should be taken that although the extension workers promote competitiveness, the stakeholders expressed concerns regarding their regular availability; some improvement in the effectiveness of this factor will be required.

Transaction cost was identified as the most constraining factor with a mean rating of CES of 1.1. Transaction cost is the cost of doing business. Another critical factor in this context for competiveness is the ability for cocoa operators to obtain short-term credit (1.4). The financial system of Cameroon is characterised by generally stringent loan policies usually involving heavy bureaucracy and the provision of collateral which can be sold to recover the money should the lender not pay back in time. The high interest rate on loans also inhibits loan applications. Another critical cost of the business factor to the industry is the general weak state of infrastructure, increasing costs substantially and especially the

road/ transportation network, which received a low rating of CES of 1.6. There was a strong consensus between the two clusters on the constraining effect of this factor.

Prior to the liberalisation, SODECAO was actively involved in the cocoa sector and was engaged in the development and maintenance of rural roads. The gradual disengagement of the body from the cocoa sector has resulted in the deterioration of the rural road network making transportation of cocoa from the farms to the export ports very difficult and expensive. This is particularly true during the rainy season when some roads are practically impassable due to mud resulting to farmers having to wait for long periods before being able to transport their cocoa to the sellers and this sometimes leads to some of the cocoa becoming rotten. To improve competitiveness of the industry, it is therefore imperative that the government develop and maintain the road network.

At the level of the two value-chain clusters, there is a consensus that general infrastructure is the most constraining factor to competitiveness. However, stakeholders in Cluster 1, operating in the primary production and agribusiness part of the value chain, cited transportation means, start-up cost and long-term credit as other very strong constraining factors. They were critical about the high cost of inputs of production. They also cited access to natural resources such as land as another critical factor. Although in some areas land is readily available, the land tenure system however makes it difficult to obtain and use as collateral (CES, 2016). Access to finance is thus a major problem due to the lack of available collateral and related security required by financial institutions. The most available security, particularly to the farmers, is their land and most of them do not place their lands as security for fear that it may be sold should they default in repayment. Although actors in this cluster are more involved with the production, they did not consider climate to have a strong impact on their competitiveness as in the aforementioned factors stating that the influence of climate is two-way; it could be positive or negative.

Cluster 2 actors, those operating down-stream in the value chain, were more concerned about the climate (transportation, storage problems, etc.), labour and market factors than cluster 1, confirming their wider supply-chain perspective. The actors in this cluster also cited the low quality of work performed by the local labour and the high cost of skilled labour and distance to market.

To improve the impact of this determinant - production factor conditions - on the competitiveness, the industry should invest in human capital – skills development, training and education. Figure 5.7 is a representation of the production factors that influence the competitive performance of the industry

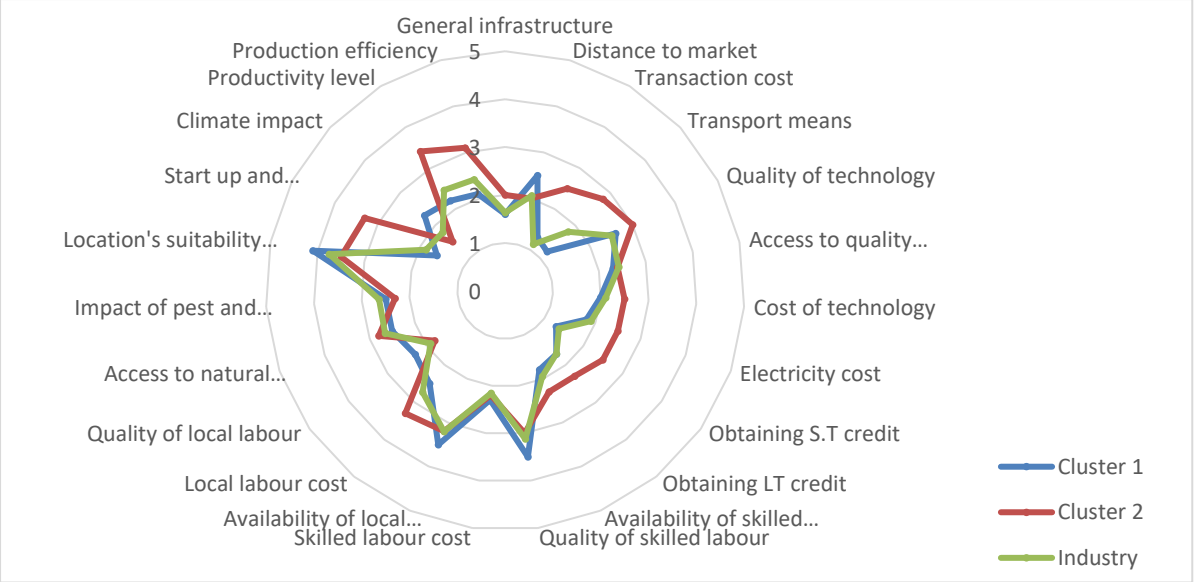

Figure 5.17: Radar plot for production factor conditions

Source: CES (2016)

Variation in views on production factor conditions in the value chain: To determine the degree of correlation and consensus between the factors ratings under this determinant a principal component analysis (PCA) was conducted. Under this determinant, most of the extraction variables were high indicating the variance accounted for by the components in each variable. An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater and less than 0.40 for the other components (refer to section 3.5).

Non-consensus views: The uncorrelated or non-consensus "variation" in opinion factors identified by the PCA for the production factor conditions determinant were: general infrastructure (P1), distance to the market (P2), access to quality technology (P5), cost of electricity (P8), obtaining short term credit (P9), obtaining long term credit (P10), skilled labour availability (P11), quality of skilled labour (P12), availability of unskilled labour (P14), local labour cost (P15), quality of unskilled labour (P16), impact of pests and diseases (P18) and access to natural resources (P17). The variations in the ratings reflect the different opinions of the stakeholders in the industry. Note however that "variation" does not imply that such factors are not valid and do not have impact; it only reflects the different opinions of the industry stakeholders, i.e. non-consensus views which may warrant further investigations in order to reach a greater degree of industry consensus for the "way ahead".

Consensus views: Under this determinant, the highly correlated or "consensus" factors identified were: the impact of climate (P21), quality of technology (P5), production efficiency (P23), transaction cost (P4) and the location's suitability for cocoa operations (P19). This indicates that industry stakeholders

agree on the rating of these factors thus providing a sound basis for related collective industry action (for detailed results of the analysis for this factor, refer to appendix D-1, production factors).

The interrelatedness between factors within the determinant: Further analysis was done to compare the differences in the responses between the various factors under this determinant using the chi-square analysis already mentioned in chapter three. Results revealed that some factors had a significant effect on others while others did not. Factors with p-value <0.05 were considered to have a significant effect on each other, i.e. have a strong interrelationship. Planning efforts and interventions dealing with this group of related factors will thus require a coordinated approach to gain optimal effect. Production factors with values significantly greater than 0.05 were considered to have no significant effect on each other and can be dealt with as independent factors affecting competitiveness.

Some of the interrelated factors with a p-value smaller than 0.05 are distance between the establishment and location's suitability for cocoa operations, location's suitability for cocoa operations and productivity level, obtaining long-term credit and production efficiency, the impact of climate and production levels, access to quality technology and the quality of work performed by skilled labour. Efforts to change or improve on a particular factor must be related to possible influence on the other factor and thus will require an integrated strategy from the cocoa industry.

Independent factors: The factors with the least statistically significant differences between them; factors for which the p-value was greater than 0.05, were also identified. Some of which were electricity cost and local labour quality (p=0.96), transaction cost and climate (p=0.93), cost of local labour and access to natural resources (0.92), access to natural resources and the impact of pest and diseases (p=0.86) and transport means and obtaining short-term credit (p=0.81). These factors reflect some degree of independence and as such, the cocoa industry will require independent strategies to deal with each directly; for example strategies to improve the access to natural resources will require a completely different approach to that of dealing with pest and diseases.

In summary, the means through which cocoa is transported does not directly influence the ability to obtain short term credit; they are independent. The influence is rather transmitted through the distance between the establishment and the market for cocoa, the location's suitability for cocoa operations, productivity level as well as the overall production efficiency.

5.4.4.2 Demand and market conditions

Under this determinant, eight factors were identified to influence the competitiveness of the cocoa industry, five of which were enhancing while the other three were constraining to the industry's performance. Figure 5.8 illustrates how these factors influence the clusters and industry as a whole. At the industry level, the factors that scored the highest for both clusters include the size of the internal

market, which was the highest scoring factor with a rating of CES of 4.1 (82%). This shows that the international market for cocoa is accommodative of Cameroon cocoa and could most likely be increased. The growing market size is evident in the case of the Asian continent particularly China, which has recently observed increase in chocolate consumption and is consequently an expanding, market for cocoa.

The quality of Cameroon cocoa in the international market was the second most enhancing factor of competitiveness with a CES score of 3.31. In the past years, the quality of cocoa produced in Cameroon had been generally low leading to decreasing competitiveness in the international market. However recent actions such as the new generation program, the sustainable tree crop program and active government involvement in the sector has led to increase in the quality standards of cocoa and the industry is therefore able to meet international standards of quality and consequently improved competitiveness. Also in the international market, cocoa from Cameroon is generally perceived to have a higher quality than that of its competitors thereby promoting its competitiveness (Traoré, 2009). The third most enhancing factor is the positive impact of seasonality with a CES rating of 3.3 by the stakeholders. Cocoa is harvested between September to February (main season) and May to August (mid-season). Cameroon and most African countries produce about 15%-20% of their total harvest during the main season unlike their other competitors, giving Cameroon a more competitive advantage than its overseas competitors (ICCO, 2014).

In the case of the constraining factors, the ability of farmers and consumers to adapt to new products received the lowest rating of 1.7. Stakeholders expressed their concern towards this factor. In the agribusiness cluster, input providers indicated that farmers particularly were often slow to adopt new modes of production and new inputs such as fertilizers or insecticides of which they do not have much knowledge. They preferred to use products they were accustomed to and this hinders the introduction of new and improved production techniques and farming inputs, consequently limiting competitiveness. In other words, there is the problem of the mentality of the producers. Sufficient and efficient marketing is therefore needed to address this issue. The second most constraining factor is access to new markets, which received a rating of 2.08. As mentioned in section 4.4, both the domestic and international markets for cocoa are concentrated in a few countries (especially the EU) and a few domestic processing plants. Access to more international markets is particularly restricted due to the high tariffs imposed on cocoa from Cameroon by some countries such as Mozambique which imposes tariffs as high as 18.5%, China (10.6%) and Malaysia (4.3%) (ITC, 2016). Stakeholders also raised the issue of difficulty in finding new trading partners.

Local market growth was considered the third most restricting factor to competitiveness (2.3). The local market for cocoa is generally small as most of what is produced is exported abroad as raw material for

chocolate production coupled with the existence of only three cocoa processing units in the country. In the case of related products like chocolate, the economy of Cameroon is generally low-income characterized by poverty and unemployment, chocolate and related products are considered luxuries, which are only affordable by the rich hence limiting their demand.

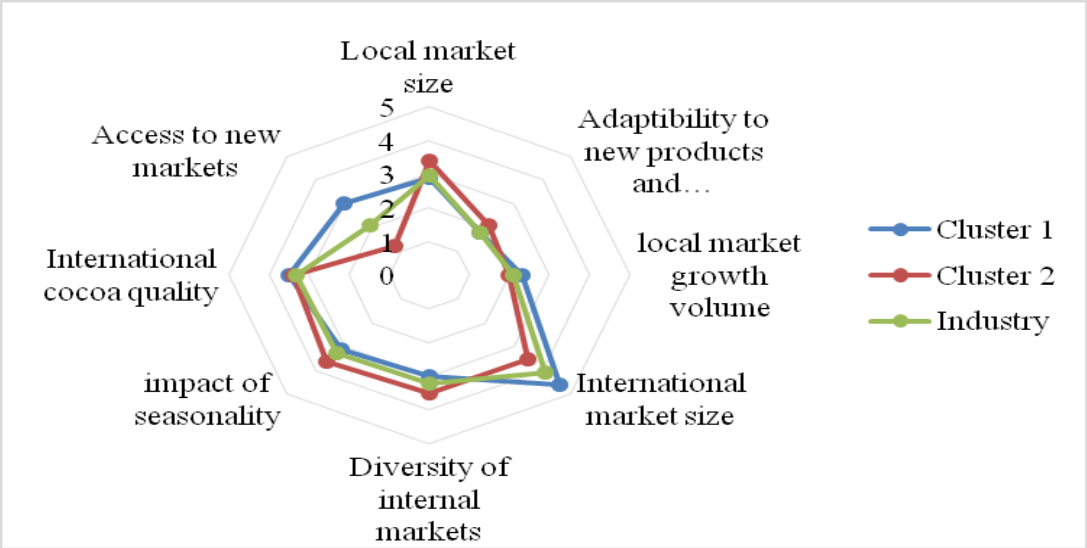

Figure 5.18: Radar plot for demand and market conditions

Source: CES (2016)

The three factors were considered the most constraining in both clusters. Actors in cluster 1 (Agribusiness) were however more concerned about the ability to adapt to new products and technology while access to new markets was most crucial to cluster two (Cocoa processors).

Variations in views in the value chain: Under this determinant, only one factor; identification and access to new markets (D8), was identified as highly correlated or a consensus factor. The industry could thus be mobilised around this factor.

The rest were uncorrelated or showed 'variation' in opinions and include: size of the local market (D1), adaptability to new products and technology (D2), local market growth volume (D3), international cocoa export market (D4), diversity (based on volume and varieties) of new international markets (D5), seasonality of Cameroonian cocoa (D6) and international cocoa quality (D7). This implies that the different members of the value chain had different opinions about these factors, i.e. the factors had varied effects on the performance of their respective sectors. For example, the growth in the local market for cocoa in the agribusiness sector was considered large enough while the processors had a more negative opinion about the growth of the local market for chocolates, i.e. "will it be possible to sell at a profit in the local market?" It may thus be challenging to mobilise the industry around these factors. Development of intervention strategies to improve the performance of the general industry will entail

the employment of different approaches for the different role players (refer to Appendix D-2 demand and market conditions for a detailed statistical analysis of this determinant).

Relationship between factors: An analysis was carried out to consider the relationship between the various factors under this determinant. Results revealed that some factors had a significant effect on others; worked closely-knit with others while others were more independent in their influence on the industry's performance.

Independent factors: When the effects that different factors had on each other were investigated, it was revealed that the least significant effects were obtained between local market size and seasonality (p=0.97), local growth volume and access to new markets (p=0.97), seasonality and international cocoa quality (p=0.92), product diversity and seasonality (p=0.65), product diversity and international cocoa quality (p=0.58) and lastly, local market size and product diversity (p= 0.64). These factors are not coherent with the views that there is a strong interrelationship between the factors within a given determinant. These independent factors will therefore require independent strategies to deal with them.

In comparison, there were significant relationships between the quality of cocoa in the international market and access to new markets, size of the international market and the impact of seasonality, among others ($p<0.05$). This interrelationship implies that improvement in the quality of Cameroon's cocoa will act as a green light to attracting new cocoa buyers from other markets who are in search of high quality cocoa (better flavour) for the production of chocolate and related products. These interrelated factors will require integrated strategies.

5.4.4.3 Related and supporting industries

This determinant refers to the industries that have a direct influence on the performance of the cocoa industry. Twelve factors were identified under this determinant; only three of which were enhancing while the rest were constraining to competitiveness at the industry level. The competency of extension officers was considered the most enhancing factor under this determinant and received a CES rating score of 3.7 (74%). From the survey, it was observed that extension service providers and advisors spent 51%-75% and more of their resources on cocoa operations. These workers spend up to 9 months of the year in providing training services and advice for cocoa operations. This factor confirms the quality of the work performed by skilled labor in enhancing competitiveness as observed under production factor conditions.

Secondly, the presence of government-funded research institutions contributes to the successful competitive performance of the cocoa industry rated 3.46 (69.2%). An example of government-funded research institution is the Institute for Agricultural Research, which carries out research on agricultural

products; cocoa inclusive. Telecommunications also has a positive impact on the competitiveness of the industry earning a CES rating of 3.2 (64%). These services range from telephone landlines, supplied by Cameroon telecommunications (CAMTEL) to mobile telecommunications supplied by MTN and Orange telecommunication services; all essential for business development.

The presence of government-funded research institutions, competency of extension officers and telecommunication services were the most enhancing factors of competitiveness in cluster 1. Stakeholders in cluster 2 on the other hand identified electricity supply, competency of extension officers and telecommunication services as the enhancing factors for competitiveness in the cluster.

The lack of presence of private funded research institutions was identified as the most constraining factor under this determinant and received a CES rating of 1.5. Private-funded research institutions are generally very limited in Cameroon in both the agricultural and non-agricultural sectors. Most research institutions in the cocoa sector are funded by the ministry of agriculture and rural development (MINADER) alongside other institutions such as CCIC and IITA. Engaging in research will foster the development of new strategies to deal with the challenges faced by the industry, such as climatic conditions, namely global warming and the introduction of new and improved techniques of production as well as new cocoa varieties. The impact of financial services was identified as another constraining factor. This is in conjunction with access to short- and long-term capital identified under the production factor conditions.

Another constraining factor was the availability of reliable transport rated CES 2.06. Due to the poor state of the road infrastructure as observed under the production factors determinant, it is often difficult to get reliable means of transport. This factor affects both clusters as well as the industry as a whole. In the agribusiness cluster, stakeholders expressed concerns regarding the means of transport, for example the transportation of cocoa from the farms is often by means of being physically carried on top the head, local transportation devices (otherwise known as trucks or wheelbarrows) or by bicycle; often a hard and tedious activity for the ageing farmers. In addition, transporting the cocoa in the few available vehicles is often expensive due to the poor nature of the roads. Also, since most of the cocoa producing zones under study are in remote areas, extension officers often have to take taxis or bikes which may not always be available and are expensive. To ease transport for extension officers, the government has allocated motor bikes to these workers but this has not helped much because driving on the poor roads with these bikes is often risky and unsafe. The frequent occurrence of accidents (especially motorbikes) on these roads is partly due to the rugged and un-tarred nature of the road. Stakeholders also voiced concerns regarding the drying and storage facilities. They indicated that although these facilities are available, they are usually in a very poor state and most of them are dilapidated (CES, 2016).

The main issue for stakeholders in the cocoa processing cluster was the problem of the appropriate services to get their raw cocoa out of the remote production areas. The effects of all the factors under this determinant on the industry and the various clusters are illustrated in figure 5.9.

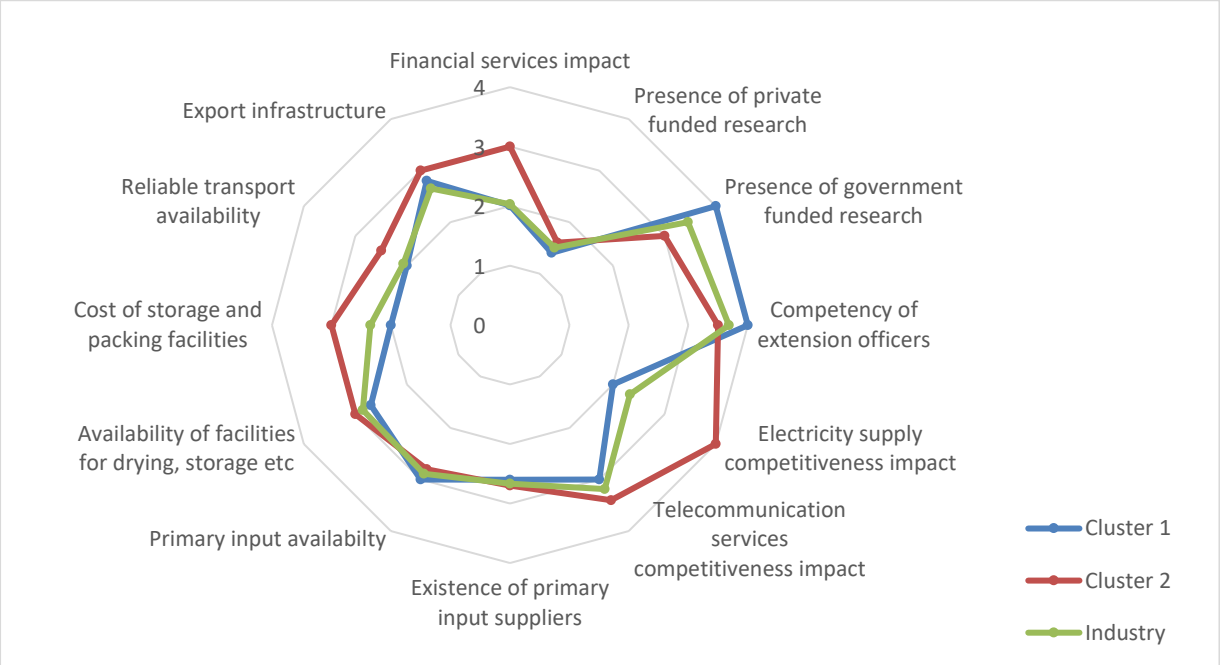

Figure 5.19: Radar plot for related and supporting industries

Source: CES (2016)

Variations in views in the value chain: Most of the factors under this determinant were observed to be uncorrelated, i.e. variations in views clusters which were established include: the availability of private-funded scientific research institutions (S2), variation factors presence of government funded research institutions (S3), and electricity supply (S6). The availability of local suppliers of primary inputs (S9), primary input availability (S11), availability of storage, packing and product handling facilities (S12), cost of storage and packing/product handling facilities (S14), availability and reliability of transport (S15) were also identified as variation factors. This indicates the varied opinions of the different clusters, i.e. the clusters are independent and tend to be affected differently by these factors, for example inputs such as fertilizers and pesticides may not be readily available for the agribusiness cluster whereas cocoa for the processors is always readily in supply. While inputs may be considered a constraining factor in the agribusiness cluster, the processors see it as an enhancing factor thereby explaining the variations in opinions.

Only four of the twelve factors indicated as highly correlated were 'consensus' factors. These are; financial and credit providers (S1), competency of extension workers (S4), telecommunication services (S8) and export infrastructure (S16) (detailed statistical analysis are presented in Appendix D-3).

Relationship between factors: A further analysis was carried out to investigate how the factors in this determinant relate to each other, in other words to investigate if the factors work in a closely-knit manner with each other to influence the industry's performance or do so independently. Results revealed that some factors had a significant effect on others whereas other factors did not.

Independent factors: the factors under this determinant that were observed to have the least significant effect on each other were telecommunication services and the availability of local input suppliers ($p=0.84$), availability of local primary input suppliers and availability of drying, storage and processing facilities ($p=0.27$), government funded research institutions and competency of extension officers ($p=0.2$). This finding may indicate that a more active link between work at research stations and extension services may be required to enhance competitiveness. Independent relationships were also observed between telecommunication services and the availability of drying, storage and processing facilities ($p=0.19$) and electricity supply and government funded research institutions ($p=0.11$).

Interrelationships were observed between electricity supply and the availability of drying and storage facilities, financial service providers and government funded research institutions, financial service providers and the availability of drying and storage facilities, financial service providers and telecommunication services. Financial service providers and the availability of drying and storage facilities are interrelated because as observed above, financial service providers often have stringent regulations before farmers are granted loans. With little financial resources, farmers cannot afford new and advanced drying ovens (so that cocoa is sold to the exporters and processors already dried) and are therefore obliged to use the existing ones which are often scarce and dilapidated.

5.4.4.4 Firm strategy, structure and rivalry

Nine factors were identified under this determinant; eight of which were enhancing and one constraining to the performance of the industry as shown in figure 5.10. It is worth noting that this is the determinant with the highest positive effect (CES rating of 3.04 or 60.8%) on the competitiveness of the industry. Market competition, which refers to the ability to compete on the global market, was perceived as the most enhancing factor receiving a CES rating of 4.6 or 92%. Also worth noting is that this factor received the highest overall rating out of all the 72 factors. This confirms the views of Porter (1990) on the important role played by rivalry from other competitors for competitive performance.

The entry of new local competitors into the market is another enhancing factor (4.02) particularly for those involved in the primary production sector. There is generally no formal procedure required to begin production; the only requirement is a piece of land and cocoa seedlings. With the entry of new local competitors, existing ones are obliged to up their game in the market in order to maintain a competitive position. The result is increased volume as well as improved quality and consequently increased competitiveness in the local market (3.6). This is in line with the Porter view that the more competition the better. Intense competition leads to improved quality of cocoa exported to the international market thereby increasing international competiveness.

The top three enhancing factors of the general industry are the same for cluster 1 with relatively higher rankings. Cluster 2 stakeholders however identified the flow of information from primary input suppliers (3.5) and the frequency at which their business strategy is reviewed as two additional enhancing factors to international market competition.

The industry stakeholders in general expressed their concerns regarding the flow of information from customers (2.45) in restricting the competitiveness of the industry. This was especially the case in cluster 1 where the factor received a rating of only 1.8. The flow of information from primary input supplies was marginally constraining receiving a rating of 2.49.This factor is marginally restricting at the industry levels but is seen to enhance competitiveness for cluster 2 (3.5). Lack of information on the part of the producers rather makes them be price takers as it hinders their ability to bargain with buyers for higher prices. In some cases, because the farmer has little bargaining power, the license-buying agents often buy cocoa from the farmers at much lower prices than those offered to them by the exporting companies in a bid to get their own “piece of the pie” thereby exploiting the farmers.

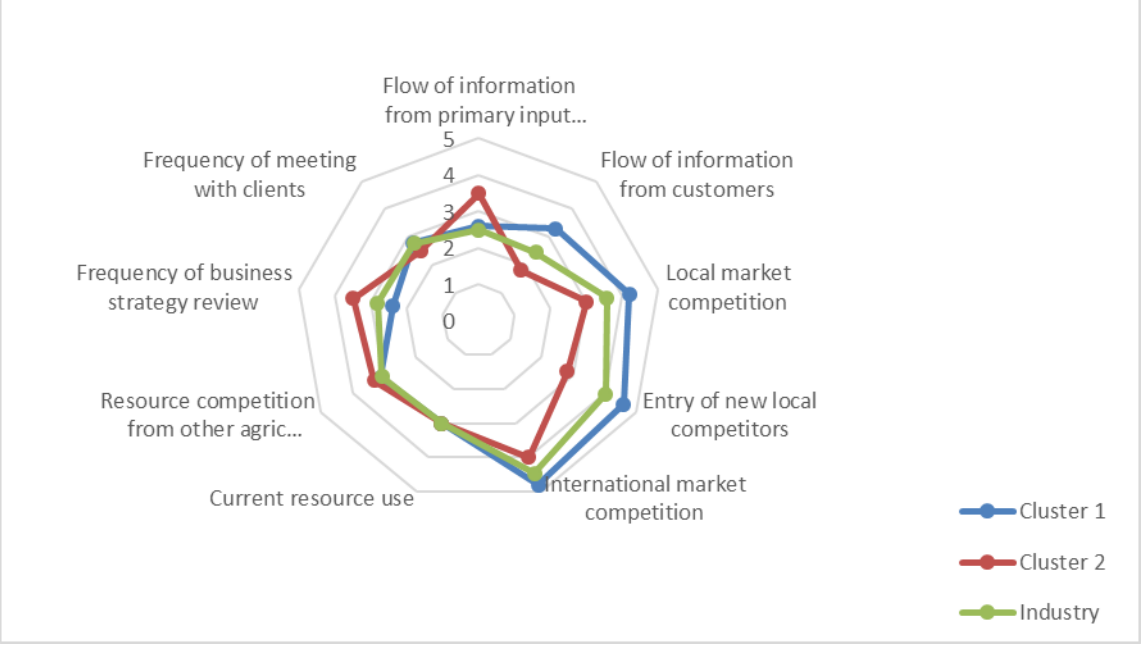

Figure 5.20: Radar plot for firm strategy, rivalry and structure

Source: CES (2016)

Variation in opinions: Under this determinant, results revealed that all the factors showed variations in opinions between different functions in the value chain. These factors include management of information flow from primary suppliers (F1), information flow and use from customers (F2), local market competition (F3) and entry of new competitors into the local market (F4). Industry stakeholders also had varied opinions about competition in the international market (F5), current resource use (F6), resource competition from other agricultural activities (F7), frequency at which stakeholders review their business plans (F8) and frequency of meeting with other stakeholders (F9).

The variation in opinions explains the view that different strategies are employed by the different value-chain actors to achieve competitiveness. While one set of actors might consider certain strategies crucial for improving performance, the other chain actors might not find the strategy very significant or applicable. The sharing/flows of information is a case in point as argued above. At producer level a different priority might be attached to such information flows as for the processors, especially where processors are opportunistic and keep some market information confidential; not sharing with primary producers.

Observed variations in opinions of different value-chain actors, could constrain competitiveness. Improved competitive performance can clearly be achieved through a better integration and information communication between role players in the chain (detailed statistical analyses are shown in Appendix D-4).

Relationship between factors: A further analysis was carried out to analyse the relationship between the various factors under this determinant. Results revealed that some factors under this determinant work closely to influence the competitive performance of the industry while others are more independent in their activities.

Independent factors: For firm strategy, rivalry and structure, the factors relating to the management of information flow from primary input suppliers and the flow of information from customers to stakeholders to inform them of their business strategy (0.81) were observed to function independently of each other. In addition, how often stakeholders reviewed their business strategy and how often they met with their clients (p=0.78) were considered to have the least effect on each other. This can be because of poor communication and information flow between the stakeholders as will be explained below. Current resource use and resource competition from other agricultural activities (p=0.69), current resource use and how often stakeholders reviewed their business strategies (p=0.3) and current

resource use and how often stakeholders met with their clients to discuss business strategies (p=0.19) also had the little significant effect on each other . This independence can be attributed to the situation that individual firms, in this case the agribusiness and processors, design different strategies as to how to compete in the market and to give effect to such strategies through confidential supply chain communication because industry-wide communication is not a priority to such role players. Nonetheless, further analysis of these factors is required to understand opportunities to create consistency within the industry.

Some of the factors that seem to work together in their influence on the industry's performance include competition in the local market and current resource use, flow of information from primary input suppliers and flow of information from customers. Local market competition and entry of new competitors into the local market, entry of new competitor and international market competition, among others also work closely together to influence the industry's performance.

5.4.4.5 Government support and policy

From the above discussions, it is evident that the government plays an important role in influencing the performance of the cocoa industry from its activities. These activities range from support, primarily for production, the provision of extension and training services and export support, including standardization and certification services. It was also noted that many influences in this determinant were political in nature, affecting government policies and actions. Eleven factors were identified to influence the competitiveness of the industry under this determinant. As presented in figure 5.11, industry stakeholders perceived that the agricultural policy of Cameroon (CES 3.5 or 70%) and complying with international regulatory standards (CES 3.3 or 66%) are the major enhancing factors of competitiveness within this determinant. Several projects have been implemented by the government of Cameroon aimed at improving the overall performance of the industry as highlighted in section 4.3.3. In cluster two, regulatory standards (CES 3.2 or 66%) together with Cameroon's financial and credit policy (CES 3.1or 61%) were seen to have the most enhancing effect on the competitive performance.

(Perceived) corruption and political opportunism had a strong (negative) impact on competitiveness (CES 1.7 or 34%). The country was also ranked 145 on the corruption perception index in 2016 (CPI, 2016. The direct effect of corruption in the cocoa sector was however not scientifically analysed by this study and is regarded as a strong perception from industry role players. Stakeholders also expressed their grievances towards the trustworthiness of politicians (CES 1.9). Politicians are viewed to often make false promises during their election campaigns but most of these promises are never fulfilled after the elections. The taxation system of Cameroon also plays a critical role on business investment for example the high income tax levied on businesses acts as a hindrance to private investment.

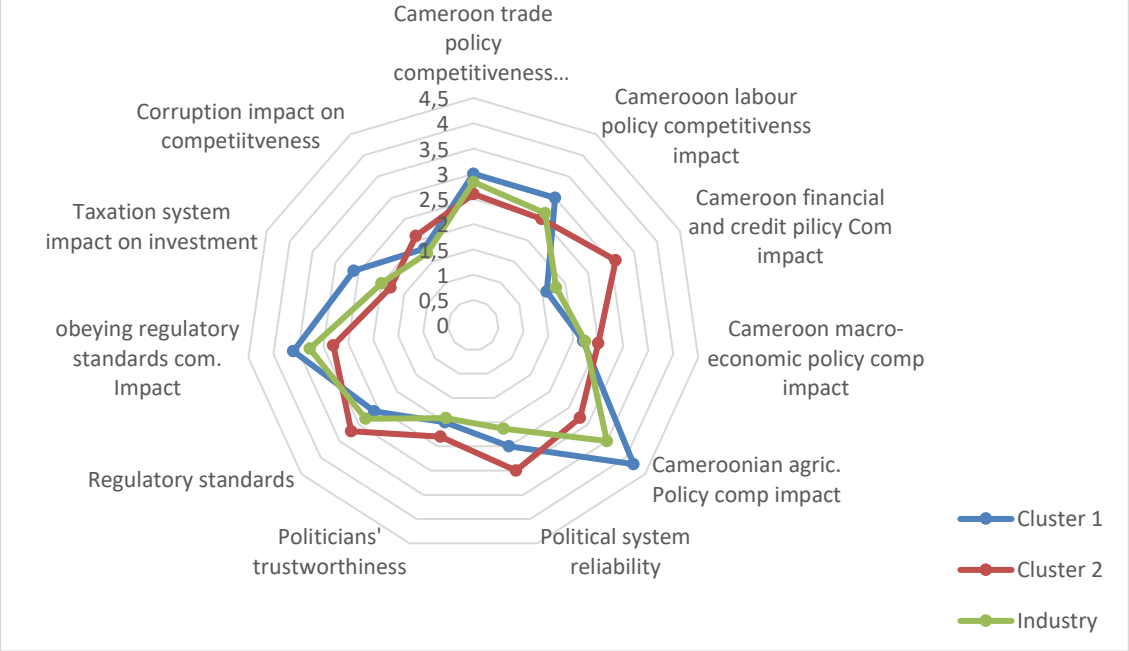

Figure 5.21: Radar plot for government policy and support

Source: CES (2016)

Variations in opinions: PCA analysis of this determinant revealed that four out of the eleven factors under this determinant were consensus factors within the industry, while the rest (7) had variations in their ratings. The factors with variations in their ratings are Cameroon's trade policy (G1), Cameroon's financial and credit policy (G3), Cameroon's macro-economic policy (G4), Cameroon's agricultural policy (G5), reliability of the political system (G6), cocoa regulatory standards (G8) and the impact of taxation on investment (G10). These policies influence the industry clusters differently hence the variations in the opinions of stakeholders. However, improved understanding with a larger degree of consensus will improve agreement on measures and actions directed at improving performance levels.

The consensus factors: these factors include Cameroon's labour policy (G2), politicians' untrustworthiness (G7), obeying regulatory standards of cocoa (G9) and the impact of corruption (G11). The clusters generally agreed on the impact of these factors thus consensus of industry-based decisions could be taken more readily.

Both clusters agreed that regulatory standards are too cumbersome to obey because of red tape and slowness, but they nonetheless enhance competitive performance by ensuring that internationally acclaimed production standards and related certification standards are adhered to (refer to appendix D-5 for detailed statistical analysis).

Relationship between factors: A further analysis was carried out to investigate how the various factors under this determinant relate to one another in influencing the industry's competitive performance. Results show that some factors had a significant effect on others whereas other factors did not.

Independent factors: Comparison of the effects between the various factors under this determinant revealed that trade policy and regulatory standards (p=0.96) and Cameroon's agricultural policy and the reliability of the political system (p=0.57) had no significant effect on each other. In like manner, politician's trustworthiness and taxation system (p=0.46), Cameroon's macro-economic policy and the reliability of the political system (p=0.45), financial and credit policy and the effect of taxation (0.46) as well as Cameroon's agricultural policy and obeying regulatory standards (p=0.1) had no significant effect on one another. Stated differently, these factors influence the performance of the industry independently. The reasons for this important discrepancy were not explored in any detail, but appear to be attributed by role players to a degree of non-transparent and uncoordinated government policy development, with a possibility of some "unintended consequences" occurring. Further research is needed to investigate such discrepancies.

Trade policy and taxation system of Cameroon, regulatory standards and obeying regulatory standards of cocoa, trade and agricultural policy of Cameroon, Cameroon's labour policy and the reliability of the political system were some factors that showed a great degree of interrelatedness.

5.4.4.6 Chance/opportunity factors

This determinant includes factors that the industry has no direct control over. This grouping of factors received the lowest overall rating among the Porter Diamond determinants, indicating a constraining impact on industry competitiveness. Nine chance factors influence the competitive performance of the cocoa industry. The effects of these various chance factors are illustrated in figure 5.12.

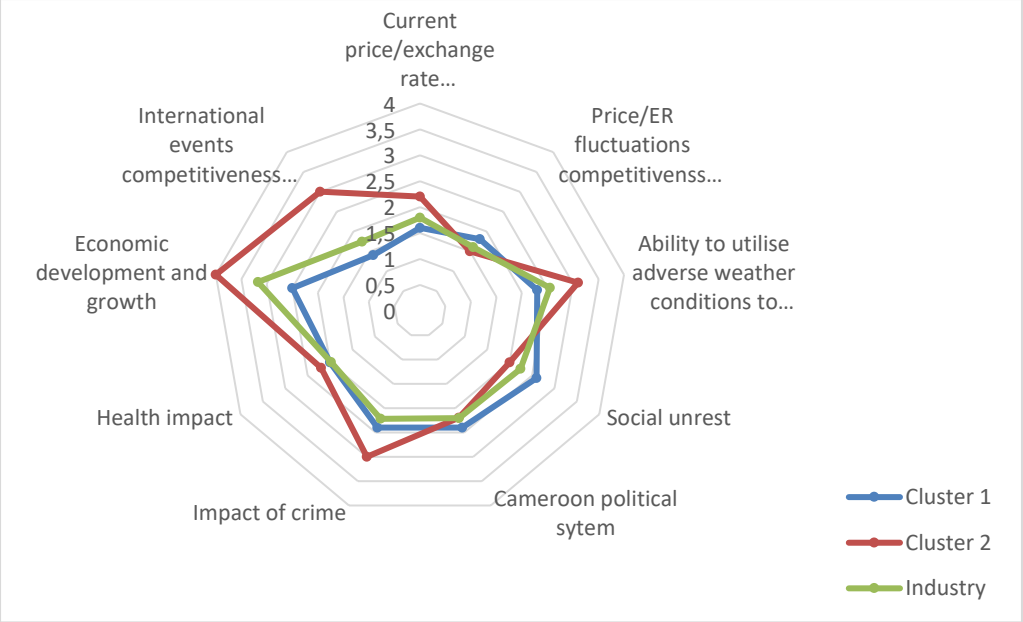

Figure 5.22: Radar plot for chance/opportunity factors

Source: CES (2016)

Economic growth and development and the ability of the industry to utilise adverse weather conditions to its advantage were regarded as the only enhancing factors under this determinant. Current price and exchange rate, price and exchange rate fluctuations and the impact of international events are the most negative factors to the competitive performance of the industry, particularly the agribusiness cluster. Current farm gate price for cocoa in Cameroon is quite low reaching an average of 900frsper kg (approximately $1.6) of cocoa at the end of the 2016/2017 season (BIC, 2017).
The effect of these low prices is low income to the farmers subsequently leading to a decline in cocoa production and reduction in cocoa exports and overall performance of the cocoa industry. Also, international events such as the EC proposal to amend market regulations 1528/2007 threatens the duty-free of cocoa into the EU market which is the largest importer of Cameroonian cocoa (CTA, 2012).

The relatively low scores in the chance factor determinant reflects a constraining and uncertain environment in which the Cameroon cocoa industry operates and needs to be considered at the strategic planning phase (step 5). Variations were further recorded between different stakeholders in the value chain.

Variation in opinions: Under this determinant, six of the factors showed variation in their opinions while three showed consensus in their ratings. The variation factors are price/exchange rate fluctuations (C2), cocoa industry's ability to utilize unfavourable weather conditions to their advantage (C3), social unrest cost on competitiveness (C4), health (malaria, HIV/AIDS, etc.) (C7), economic growth and development of the country (C8) and the impact of international events on the industry's

competitiveness (C9). Reasons for these variations can be attributed to the fact that the different chain actors react differently to these factors. Social unrest, for example the on-going Anglophone crisis in the country, affects the stakeholders differently. In the southwest region where the study was carried out, there is the practice of 'ghost towns' as a strike strategy. During the days of 'ghost town' everyone is expected to stay indoors; all economic activities are shut down and farmers cannot go to their farms to tend their cocoa, extension officers cannot carryout training sessions while input providers cannot provide the necessary farming inputs because their stores are closed. This tends to have a negative impact on the industry's performance at the level of primary cocoa production. Processors on the other hand are not greatly affected by the on-going crisis because they are located in Douala, which is in the francophone region of the country where all economic activities are running smoothly. Another example can be cited from international events; an increase in the quality requirement in the international cocoa market may affect the stakeholders involved in primary production negatively (some cocoa will not be sold because they do not meet with the quality requirements) whereas the cocoa processors will not feel the impact because they get all their cocoa from the domestic producers.

Current price/exchange rate (C1), the country's political system (C5) and the cost of crime (C6) were identified as the highly correlated or consensus factors within this determinant (for detailed analysis, see Appendix D-6).

This determinant is generally negative. This negativity might stem from the fact that the occurrences cannot be predicted. The industry is also not well coordinated within the cocoa-value chain which may not allow for "quick fixes" to respond positively on such change factors. Developing intervention strategies may also be problematic because one strategy can work for a particular year and fails the next.

Relationship between factors: Under this determinant, current price/exchange rate and international events (p=0.97), Cameroon's political system and crime (p=0.91), social unrest cost and the cost of crime (p=0.83), social unrest and Cameroon's political system (p=0.75) and health and international events (p=0.41) had the least significant effect on each other. That is they are viewed as largely independent factors.

5.5 Conclusion

This chapter was concerned with results and findings as per the application of the first four steps of the analytical framework. Although the competitive performance of the cocoa industry has recently dropped, its performance trend is still highly competitive since 2001 compared to most of its competitors, except for Cote d'Ivoire, Ghana and Ecuador.

Value-chain analysis showed the primary production of cocoa beans to be more competitive than the value-adding processes, i.e. cocoa butter, paste, powder, etc. Chocolate production was found to be the least competitive of the value-adding processes. This indicates that increased competitiveness will require improved processing and related value-chain strategies.

In analysing the performance, 72 factors were identified by industry role players to influence the competitiveness of the industry. Grouping these factors into the major Porter determinants revealed that firm strategy, structure and rivalry had the highest positive impact (CES=3.04) on the competitive performance of the industry while related and supporting industries (CES=2.8), government support and policy (CES =2.62) and demand and market conditions (CES=2.63) did enhance industry's performance. Production factor conditions (CES=2.28) and chance factors (CES =2.22) had the least positive effect on the industry's performance. This implies that the cocoa industry of Cameroon is operating in a "mixed" supportive environment generally enhancing competitive performance.

Transaction cost, obtaining short-term credit, presence of privately-funded research institutions and price/exchange rate fluctuations were identified as the most constraining factors to competitiveness. These factors therefore warrant immediate action to boost competitiveness.

From a value chain perspective, two clusters of stakeholders were analysed; Cluster 1 consisting of actors in the value chain that deal with cocoa in its raw form (cocoa beans) - the agribusiness cluster; while Cluster 2 are the manufacturers and those involved in the transformation of cocoa into semi-finished and finished products - the processors cluster. Generally, those in Cluster 1 (agribusiness) tended be less buoyant/optimistic than Cluster 2 (processors). Cluster 1 gave lower ratings indicating stronger constraining factors that impact on the competitive performance. This notion corresponds largely to those found by Boonzaaier (2015) in the South African stone fruit industry and those of Angala (2015) in the Namibian date industry, these being less optimism closer to the primary production end of the value chain due to the more direct exposure to production factor and chance variations such as weather and climate risk, and price and exchange rate fluctuations. These higher risks impact on activities in this part of the value chain – climate, price, crop losses, etc. and the general inability and expensive premiums to insure in this environment contributing to such a finding.

In order to identify correlated and non-correlated factors within the 72 factors identified, PCA was applied and the results revealed that 20 out of 72 factors rated as relevant (both enhancing and constraining) and correlated for competitive performance. It also showed some variation in opinion on 52 out of 72 factors. This does not mean a factor for which there is little consensus should be disregarded, as such a factor may indeed have a great impact in particular parts of the value chain. It

rather draws the attention to the sensitivity of processes when industry-level strategies are developed i.e. more consensus seeking may be required where big variations were recorded. This aspect will be considered in step 5, in the next chapter.

A least significant difference (LSD) analysis was conducted to determine whether the Porter determinants and their respective factors work in a coordinated and " close-knit " manner to influence the performance of the industry or not, i.e. to determine the relationship between the Porter determinants and their respective factors within the context of the Cameroon cocoa industry. Findings showed that some determinants and factors were independent while others were interrelated. Some of the interrelated factors include distance between the establishment and location's suitability for cocoa operations, the quality of cocoa in the international market and access to new markets, financial service providers and the availability of drying and storage facilities etc. Some independent factors on the other hand include local market size and seasonality, government funded research institutions and competency of extension officers, management of information flow from primary input suppliers and the flow of information from customers to stakeholders to inform them of their business strategy to name a few.

The general results reveal that according to the RTA measurements, the industry is highly competitive whereas value chain actors consider the industry less so and in some cases even marginally competitive. This could be so because the RTA method of measurement is more objective; based on empirical data and analysis, whereas the views of the value-chain actors in the CES are more subjective in nature and, based on recent experiences (if the RTA value drops), there could be a negativity recorded in views and opinions. This might also be based on the observation that operational actors in the industry focus more on the negative aspects of the industry if an occasion such as participating in a survey is being viewed as useful for (government) lobby purposes to gain benefits. This corresponds to findings of Boonzaaier (2015) in the South African stone fruit industry and Angala (2015) in the Namibian date industry, especially in the agribusiness part of the value chain. Sefoko (2011) also reached a similar finding in his Ph.D study; comparing objective with subjective measurements of black economic empowerment (BEE) actions as an instrument for transformation in the South African wine industry. His findings revealed that objective standards such as the Industry Scorecard often ignore the social complexities of the transformation process. Subjective measurements, the CES in this study, should therefore supplement objective measures, the RTA in this study, in order to take into consideration all potential impacts and interpretations. This would present a clearer picture than using just objective measurement procedures only.

CHAPTER SIX: RECOMMENDATIONS AND CONCLUSIONS

6.1 Introduction

This chapter provides a brief summary of the approach used and some of the major findings of the study and focus on proposed strategies (step 5) through which the competitiveness of the industry can the enhanced. Concluding statements on the research objectives and the validation of the hypothesis and research methodology will be made, followed by proposals for further research.

6.2 Summary

Chapter 1 laid the foundation of the study. It provided the background to the research, outlined the research problem that instigated the need for the study, the research objectives, research questions and hypothesis of the study. A brief description of the framework of analysis employed in the study was provided followed by the data and method of analysis. Chapter 2 provided the theoretical framework of the study. Firstly, it considered various definitions of the concept from which an appropriate definition of competitiveness within the context of the Cameroonian cocoa industry was identified. A theoretical background on the evolution of the concept of competitiveness was discussed followed by various methods of measuring competitiveness and then some previous studies on agricultural competitiveness were also outlined. A brief background on the value-chain approach as it relates to competitive analysis was given drawing attention to the observation that "the weakest link in the chain will determine the overall performance" including the importance of information flow in the value chain. Chapter 3 elucidated on the methodology and the analytical framework employed in the study. Additions to the recent methods applied by Jafta (2015), Boonzaaier (2015) and Angala (2015) were proposed, including measuring of value-adding activities in the value chain; analysing differences in views between value chain players; and considering the relationship between the six Porter Diamond determinants and their respective factors impacting on competitive performance within the context of the Cameroon cocoa industry.

An overview of the cocoa industry of Cameroon was provided in Chapter 4. This section dealt with the global production and market of cocoa as well as that of Cameroon. It provided an overview of the trends in cocoa production and export in Cameroon as well as the major producing areas in the country. The institutional setups of the industry in the country and some projects that have been undertaken to improve on the performance of the industry were also discussed. The cocoa value chain was also analysed in this section.

Chapter 5 presented the results from the first four steps of the analytical framework. The first step involved the definition of competitiveness in the cocoa industry. The study adopted Freebairn's (1986)

definition of competitiveness, which states that an industry is competitive when it is able to successfully trade its products in the international market and achieve sustainable growth while earning at least the opportunity cost of resources employed. The RTA technique was applied to data from FAO and trademap to measure the competitiveness of the industry from the period 1961 to 2013 for FAO and 2001 to 2015 for ITC (step 2). RTA values revealed that although the country has experienced fluctuations in its competitive performance ranging from 10 -50 for the agricultural FAO database and 46 to 204 for ITC, it is still competitive in the international market. Values of ITC were higher than the FAO because the ITC measures the performance of cocoa relative to all other tradables while FAO only considers agricultural products. The ITC paints a more accurate picture of competitive performance as a wider opportunity cost base is accommodated.

Four different phases were identified in the competitiveness trend of the industry, namely the post-colonial period; centrally regulated competitiveness (1960-1986), the period of the economic crisis and cocoa market liberalisation (1987-1993), recovering competitiveness (1994-2007) and increasing competitiveness in a fluctuating market and new global challenges (2008 onwards).

Cocoa was also compared with two other major agricultural exports, i.e. coffee and banana, and the findings revealed that cocoa is more competitive than these products. International comparisons revealed that Cote d'Ivoire was the most competitive country in the international market followed by Ghana and then Cameroon.

Value chain comparisons were done between the various value-adding processes along the cocoa chain and results showed cocoa beans to be the most competitive in the chain while the least competitive was chocolate and related products, which was uncompetitive for most of the years except for the years 1968 and 1970-1981 during which the sector was marginally competitive. Improvement of the overall industry competitiveness will entail the improvement of the weakest link and, in this case, the chocolate section.

In step 3, the Porter diamond framework was applied to the data collected by use of questionnaires during the CES and complemented by telephonic interviews and discussions with relevant industry stakeholders. 72 factors were identified that influence the performance of the industry. 2.5 was considered the benchmarking rank where factors rated lower than 2.5 were regarded to negatively influence the industry's performance while those above 2.5 were enhancing to the performance of the industry.

Various statistical analyses were carried out on the data. Stakeholders were sub-divided into two clusters; those involved with cocoa in its raw state, i.e. farmers, input and service providers and cocoa exporters (Cluster 1) (agribusiness) and those involved in the transformation of cocoa into semi-finished

and finished products (Cluster 2) (processors). At the industry level, 55.6% of the factors were considered constraining to competitiveness, 44.4% were considered enhancing while no factor was considered to have a neutral effect on competitiveness thereby confirming the validity of the questionnaire. Cluster 1 actors generally scored lower ratings factors to competitiveness and were less optimistic about the industry's performance than Cluster 2. Principal component analysis (PCA) was applied to identify factors for which respondents' views were highly correlated and those for which their responses were variable. Four of the major determinants were observed to have a positive impact on competitiveness with firm strategy, structure and rivalry having the most enhancing influence (3.04). This indicates that the cocoa industry of Cameroon operates in a generally marginally competitive environment. The chance determinant was the most constraining among the determinants with a rating of only 2.22 followed by production factor conditions (2.28).

- The interrelatedness versus independence of determinants and factors - enquiry into the relationship between the Porter determinants and factors revealed that a strong relationship exists between some of the factors and determinants while others were more independent in their influence on the industry's performance. The findings thus draw attention to where a coordinated and integrated approach should be followed with strategy development and when such an approach is not so relevant.
- Consensus statements - the different value-chain actors agreed on the effects certain factors have on the competitive performance but had varied views on others.

Step 5 will draw from the findings of the first four steps to make relevant conclusions and propose informed strategies on how the industry's competitive performance can be improved.

6.3 Proposing industry level strategies to improve competitiveness (step 5)

According to Porter (1990), although some countries are more competitive than others in the international market, the actual competition is between industries rather than countries as a whole. Therefore, increasing a country's overall competitiveness involves engaging in industry and country-level strategic planning.

6.3.1 Recommendations per determinant

From the analysis of the competitiveness status of the Cameroon cocoa industry, with information obtained from the CES and complemented with telephone interviews and written comments, a number of strategic measures can be recommended as to how the industry can improve its competitiveness.

Ideally, such recommendations should be subjected to formal focus group discussions with stakeholders to get their views and establish strategies that could be adopted. This was however not feasible, partly due to high traveling costs and also logistical considerations in mobilising such representative focus groups. These recommendations are thus proposed to be considered as "business intelligence" based on the outcome of the study, but not confirmed by industry interactions

Industry level: The recommendations will be presented according to the Porter framework and will focus firstly on factors where there is a strong general industry level consensus as laid out in Table 6.1.

Table 6.11: Strategic industry level proposals per Porter determinant

Porter determinants	Constraining factor to competitiveness	Strategic proposals
1. Production factors	1.1.Labour considerations	1.1.1 Engage actively in human resource training and development through schools, internships and vocational training workshops. 1.1.2. Setting curricula, standards and evaluation processes.
	_____	_____
	1.2. High operating cost (this was a consensus factor for both all stakeholders in the industry)	1.2.1. Production cost considerations: Negotiate with government to lower import tax on imported inputs 1.2.2. Focus on cost effective R&D to support lower production costs; and yield increasing technology- seeds, cultivation, etc. so that the unit production costs can be increased. 1.2.3. Expansion to new areas, growing zones to new potentially fertile areas e.g. Ebolowa.
	_____	_____
	1.3 Poor road and transport infrastructure.	1.3.1. Infrastructural development and maintenance especially the road networks in the rural areas: road development and maintenance training programmes; negotiate private contributions to support government budget for the required maintenance

2. Demand and market conditions	2.1 Adaptability to new products (consensus factor) 2.2 Expand access to markets especially at the international level (consensus factor)	2.1.1. Creation of product awareness through generic advertising campaigns and demonstrations. Both at the domestic and international levels. 2.2.1. Market diversification
3. Firm strategy, structure and rivalry.	3.1 Improved management information flow between industry stakeholders	3.1.1. Increased value chain management collaboration: Regular communications; round table sessions, joint delegations to government – establish or strengthen a Cocoa Value Chain Association and 3.1.2. Establish a capacity to do "competitive analysis"
4. Government policy and support	4.1..Access to land 4.2 .Taxation system 4.3 .Labour policy 4.4 Financial and credit policy	4.1.1 Review land tenure system to ease access to land. 4.2.1. Create investment friendly environment through reduction in taxes and/or tax exemption for start-up companies 4.3.1.Training 4.4.1. Review financial and credit policies to support farmers; as well as drying and storage facilities

Source: Author's own research

Recommendations per value chain clusters: This section focuses on the outcomes of the cluster analysis and highlight relevant recommendations in different parts of the cocoa value chain to improve competitive performances. There was consensus between the agribusiness and processing clusters on the impact of high transaction cost (cost of doing business); adaptability to new products; and access to new international markets and that appropriate intervention strategies are needed to boost competitiveness. Access to new markets for example is a crucial factor to both the agribusiness cluster

and the processors because the agribusiness sector seeks to expand its financial earnings through improved lucrative markets for their cocoa beans, while the processors want to expand their chocolate market at both the domestic and international levels. Identifying and designing market access strategies will therefore benefit the performance of the entire industry. New markets could be accessed through the creation of new trade partnerships and expansion in the sales of cocoa to other potential attractive markets other than the already saturated EU. The market attractiveness index (MAI) could, for example, be used to identify potential attractive markets for Cameroon's cocoa, internationally as well as expanding the domestic markets. Efficient advertising and marketing campaigns as well as providing sufficient education to the consumers on the "uniqueness" of Cameroon cocoa products will also be necessary.

Tables 6.2 and 6.3 list some strategies to improve competitiveness at the agribusiness cluster recommendations and processor-cluster level recommendations; some linking to those already outlined at the industry level in Table 6.1. These recommendations however are listed again as certain differences in emphasis and scope was recorded at the cluster-consultation level.

Table 6.2: Agribusiness cluster (Cluster 1) level proposals per determinant

Porter determinants	Constraining factors to competitiveness	Strategic proposals
1. Production factors	1.1 Transportation means . _____ 1.2 Obtaining short term credit	1.1.1 Improving the road network infrastructure will render it more cost effective to transport cocoa from farm to market. 1.1.2. The government could support farmer cooperatives with trucks to ease transportation and reduce the strenuous hard labour presently used._____ 1.2.1. Reduce red tape such as high cash flow expectations, strict credit history assessments, financial statements detailing income and expenses etc. involved in loan applications and change collateral requirements in view of the restricting land tenure arrangements. 1.2.2. The government and cooperative should provide farmers with appropriate credit schemes to purchase farming inputs.

2. Demand and market conditions	2.1 Adaptability of farmers to new products (consensus factor): Global and local market growth	2.1.1. Creation of product awareness for new and changing consumer and processor requirements through promotion and advertising campaigns and demonstrations. This could be done by both the government and farmer cooperatives.
3. Firm strategy, structure and rivalry.	3.1 Information flow in the value chain	3.1.1. Increased collaboration and trust between farmers and input suppliers through regular farmer/demonstration days, social media communications, and informed extension services.
4. Related and supporting industries.	4.1 Presence of private initiatives in research institutions 4.2 Electricity supply 4.3 Processing capacity development	4.1.1. Encourage private sector to invest in the research and development domain and to support the upgrading of existing research establishments in the government sector through private/public partnerships (PPP). 4.2.1. Creation of more low cost power generating points - such as the Yoke river and Menchum Falls will ensure sufficient electricity supply and minimise power cuts. 4.3.1. Creation of more cocoa processing units/plants to increase local cocoa processing capacity.
	5.1 Financial and credit policy 5.2 Macroeconomic policy	5.1.1. Review financial and credit policies to support cocoa farmers and related agribusiness. 5.2.1. Introduce favourable 'start-up" funding for farm production and drying and storage facilities.

All the factors listed in table 6.2 showed variations in their ratings.

Source: Author's own research

Table 6.3: Processor cluster (Cluster 2) level proposals per determinants

Porter determinants	Constraining factor to competitiveness	Strategic proposals

1. Production factors	1.1 Quality of labour	1.1.1. Skills training and development: chocolate production requires specific skills, which the local labour does not always possess resulting in poor quality of their work. Vocational training and development is needed to equip the workers with the necessary knowledge and skills.
	1.2 Reducing cost of skilled labour	1.2.1. With training and development, more people will be skilled in the processing of cocoa into chocolate thereby increasing productivity and reducing per unit costs. More local labour will also be employed..
2. Firm strategy, structure and rivalry	2.1 Information flow customers	2.1.1. Customer consultative sessions: Increase customer satisfaction by listening to the customers, building trust thereby creating strong long-term relationships.
3. Chance factors	3.1 Dealing with price and exchange rate fluctuations	3.1.1. To consider market diversification strategies; 3.1.2. Cooperative currency insurance schemes for the cocoa industry; and 3.1.3. Price hedging sales.

Source: Author's own research

From the study and afore mentioned recommendations, the top five recommended proposals that are very essential for improving the industry's competitive performance are outlined in table 6.4 below

Table 6.4: Top five industry level proposals

1. Transaction cost considerations	1.1. Improved value chain coordination between actors leading to reduced cost such as information cost, transportation costs etc.
2. Obtaining short-term credit	2.1. Reduce red tape such as high cash flow expectations, strict credit history assessments, financial statements detailing income and expenses etc. involved in loan applications and change collateral requirements in view of the restricting land tenure arrangements. 2.2. The government and cooperative should provide farmers with appropriate credit schemes to purchase farming inputs.
3. Presence of private funded research institutions	3.1. Encourage private sector to invest in the research and development domain and to support the upgrading of existing research establishments in the government sector through private/public partnerships (PPP).
4. Dealing with price and exchange rate fluctuations	4.1. Market diversification strategies; 4.2. Cooperative currency insurance schemes for the cocoa industry; and 4.3. Price hedging sales
5. Poor road and transport infrastructure.	5.1. Infrastructural development and maintenance especially the road networks in the rural areas: road development and maintenance training programmes; negotiate private contributions to support government budget for the required maintenance

Source: Author's own research

The overall results showed a low level of alignment between the two clusters, i.e. the agribusiness operators and processors. Worley (1996) states that industry value chains can sustainably compete when the chain actors or components perform effectively and efficiently. For the Cameroonian cocoa industry to achieve sustainable competitiveness, there has to be a strong collaboration between the value chain actors**.**

6.4 Validation of the research hypothesis

This section aims to validate the two main hypotheses that were set out in chapter 1viz that the cocoa industry of Cameroon has performed competitively in the global market from the period 1961 to 2013; and that this competitive performance was not influenced by only one factor; rather a range of factors.

Hypothesis one: The first hypothesis which made reference to the competitive performance of the cocoa industry was validated through the application of the RTA technique to data obtained from FAO and ITC Trademap. The cocoa industry of Cameroon has been consistently competitive - from 1961 to 2013.

Hypothesis two: Application of the Porter model and the data collected during the CES revealed that the industry's performance is influenced not only by a single factor, such as natural resource endowment or government support/policy, but rather a wide range of factors such as political choices and government policy, global demand, trade arrangements, marketing and firm strategy, exchange rates and other sporadic/chance factors. Some of these factors were highly interrelated while some were independent, each requiring a particular treatment in handling it in strategy formulation. This analysis clearly validates the second hypothesis.

The research questions pertaining to the performance of the cocoa industry of Cameroon in the global market was also answered. Cameroon has performed competitively in the international market, generally outperforming countries like Nigeria, Brazil, Mexico but its performance was not as good as that of Ghana, Cote d'Ivoire and Ecuador.

6.5 Recommendations for further research

From the analysis and findings, some recommendations were made for future research or similar studies on competitiveness in the agricultural sector.

Expanding the scope of study: The study focused only on the South West region of Cameroon, which is the largest cocoa producing region of the country. A comprehensive analysis carried out in all the cocoa producing regions, including more stakeholders, will give a better picture of the industry's competitive position with regards to the factors that affect competitiveness. A study of this nature will enable industry stakeholders and the government to know exactly how the different factors are perceived in different regions to enable better strategic planning as to which actions to take to encourage competitiveness in the different regions. Also studies could be undertaken on the individual cocoa products, i.e. cocoa beans, cocoa paste, cocoa butter, chocolate, etc. in order to make comparisons between the competitive performances between them. Given that this is the first competitiveness study in the agricultural sector of Cameroon, the analysis can be expanded to other food and non-food agricultural chains.

Comprehensive value chain analysis: This study conducted a relative restricted value chain analysis. This was done from an industry competitiveness perspective with a focus on strategic development and

planning, Value chain analysis can be expanded to consider complementary and supplementary relationships between products, information flows, sharing of added value and related matters. The link between industry analysis and firm competitiveness should also be pursued (World Bank, 2007; Webber & Lambaste, 2010; Van Rooyen and Boonzaaier, 2016).

Revision of the RTA formula as a method of measurement of competitiveness: The RTA formula for calculating an industry's competitiveness considered imports and exports of the given industry. It does not directly account for domestic or internal trade and hence may not fully account for the industry's competitiveness. A more comprehensive picture of any industry's competitive performance will consider the inclusion of domestic trade in the RTA methodology/formula. This factor may however be accounted by the inclusion of reduced import values.

Market diversification: Market research with the Market Attractiveness Index (MAI) could enable the identification of potential attractive markets for cocoa in addition to the already existing markets. The identification and intrusion of such markets will improve the industry's market share, as a strategy to improve competitiveness.

Future based analysis: The current five-step model only focuses on historical trends and what can be learned from such trends. However, a future perspective can greatly enhance the process and give effect to a prognostic approach to strategic planning (Van Rooyen & Boonzaaier, 2016). The development of futuristic approach to competiveness will enhance strategic intelligence at the policy level in scenario developments, for example the Agri-industry business confidence index developed by Esterhuizen (2006) could be adopted in future studies to aid in the prediction of expected variations in competiveness.

The relevance of the Porter model for developing economies should also be further investigated. This is inter alia based on the findings in the study that the Cameroonian cocoa industry is highly competitive despite the uncorrelated and unstructured environment in which the industry operates. Porter, on the other hand, argues that such correlation and structure, especially strong rivalry, will be required in highly competitiveness economies. The Cameroon evidence thus somehow contradicts the Porter theory.

6.6 Conclusion

Cameroon is the fifth largest producer of cocoa in the world and the third largest in Africa. The prominent position enjoyed in the world market and the important role played by cocoa in the country's economy prompted an analysis to investigate the competitive performance of the industry. The

application of the five-step analytical framework was used to determine the competitive performance of the industry. Competitiveness was defined appropriately relative to the cocoa industry of Cameroon.

The RTA formula was applied to data from FAOSTAT (1961-2013) and ITC Trademap (2001-2015) to measure the competitiveness trend of the industry. Results revealed the cocoa industry of Cameroon is generally highly competitive. RTA values (FAOSTAT) ranged from 10 to 50 while the multisector competitiveness index (ITC) ranged from 46 to as high as 204. Differences in the indices are explained by FAO providing data for only agricultural products while cocoa was compared to a wider range of agricultural and non-agricultural exports for the multisector-based index (ITC). Four stages of competitiveness were identified; post-colonial competitiveness, period before the economic crisis, emerging competitiveness and increased international competitiveness.

Through the CES, the various factors influencing the competitive performance of the industry were identified and grouped under the major Porter Diamond determinants. Four of the six major determinants had enhancing influences on the performance of the industry. The findings validate the hypothesis that the competitive performance of the Cameroonian cocoa industry was not influenced by only one, dominant factor but rather a set of factors related to demand conditions, rival industries and exchange rate fluctuations.

Industry strategies were formulated, in collaboration with industry role players, to improve competitive performance of the industry. Improved value chain collaboration proved to be an important item in this context.

From the analyses and findings of the research, some recommendations were made for further studies and include market diversification, comprehensive value chain analysis and the expansion of the study scope.

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APPENDIX A: RTA Comparison of competitiveness of Cameroon with other major cocoa producing countries

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Nigeria	-0,2	-0,2	-0,1	4,3	4,7	0,1	4,5	3,6	11,0	6,0	-8,3	12,2	9,4	3,0	
Dom REP	27,9	5,0	5,6	4,2	3,3	6,6	8,0	9,4	12,9	15,1	11,8	10,3	9,0	8,4	10,7
Cote d'Ivoire	321,8	428,9	345,1	251,1	211,4	188,1	204,3	215,9	229,5	259,5	277,0	202,3	159,6	229,0	294,3
Brazil	1,0	0,3	0,7	0,9	0,9	0,6	0,3	0,4	0,0	0,2	0,2	-0,1	0,1	0,0	0,1
Ecuador	8,9	10,2	10,5	8,4	7,7	6,2	7,7	7,0	10,4	9,5	10,8	7,5	8,8	10,2	18,0
Ghana	118,8	272,4	244,8	173,8	206,8	285,1	220,8	190,6	110,2	92,6	63,3	64,2	57,3	96,1	
Peru	0,5	0,7	0,8	0,6	0,6	0,5	0,9	0,8	0,7	0,8	0,6	1,1	1,9	2,4	
Indonesia	2,9	4,6	3,4	2,7	3,2	3,9	3,6	4,3	4,1	3,8	2,4	1,9	2,3	1,7	2,3
Cameroon	46,7	65,0	50,3	55,3	54,7	41,3	33,9	134,9	204,2	91,1	169,6	54,2	52,0	57,3	94,8
Papua new Guinea	1,9	15,5	12,4	9,6	13,7	9,5	12,3	15,2	16,2	12,5	11,5	7,9	8,0	4,9	
Mexico	-0,3	-0,3	-0,3	-0,3	-0,3	-0,2	-0,2	-0,2	0,1	0,2	0,1	0,1	0,1	0,1	0,2

APPENDIX B: Questionnaire for Cocoa executive survey (CES)
(Overleaf)

RESPONDENT INFORMATION	
Name of Respondent:	
Contact number:	
E-mail address:	
Geographical Area: (Region/Sub division/ town)	

Fruit Type: Crop Distribution (Mark with "x" where applicable)	**Cocoa beans**	**0**	**Processed cocoa**

Position in the value chain: Mark with "x" where applicable * More than one position is possible	**Input or Service Provider**	**Producer**	**Pack house or Processor**	**Exporter or Marketer**	**Advisor/Informant/Consultant**

If an Input or Service Provider, indicate with an "x" applicable % of resources (land, human, capital) spent on Cocoa operations	<10%	11%-25%	26%-50%	51%-75%	>75%

If a Producer, indicate with an "x", the applicable area (ha) under Cocoa Production	<5ha	6ha-10ha	11ha-15ha	15ha-20ha	>20ha

If a Pack house or Processor, indicate with an "x" the volume of Cocoa (ton) produced by your project	<50t	50 t-100 t	100 t - 500 t	>500 t

If an Trader, Exporter or Marketer, indicate with an "x", the applicable volume (equivalent cartons) of all Cocoa Exported	<100	100 - 500	500 - 1000	>1000

If an Advisor/ informant/consultant, indicate with an "x" applicable % of resources (human capital e.g. time) spent on Cocoa	<10%	11%-25%	26%-50%	51%-75%	>75%

Please mark only one block: 1 = negative; 3 = neutral; 5 = positiveAny additional comments would be welcomed in the space provided

PRODUCTION FACTOR CONDITIONS

1) The general state of infrastructure (roads, electricity, drying/storage facilities which enables you to produce/ purchase/store/process and market your product is:

Poorly developed and insufficient

1	2	3	4	5

Well developed and sufficient

2) The distance between your establishment and the market is:

Extremely far

1	2	3	4	5

Very close

Comment: _____

3) The means of transportation used to transport your product is:

Extremely difficult and costly

1	2	3	4	5

Easy and very affordable

Comment: _____

4) The transaction cost in your business is: (E.g. cost of doing business, finding markets, bureaucratic red-tape etc.)

Extremely high

1	2	3	4	5

Very affordable

Comment: _____

5) The quality of technology available to your industry (which facilitates your work)is:

	1	2	3	4	5	
Generally lagsbehind other industries						Is outstanding

Comment: _____

6) Access to quality technology for you industry is:

	1	2	3	4	5	
Difficult to obtain						Easy to obtain

Comment: _____

7) The cost of technology is:

	1	2	3	4	5	
Extremely high						Very affordable

Comment: _____

8) The cost of electricity for drying and processing cocoa is:

	1	2	3	4	5	
Extremely high						Very affordable

Comment: _____

9) Obtaining long-term credit for your business is:

	1	2	3	4	5	
Extremely difficult and too costly						Easy and very affordable

Comment: _____

10) Obtaining short-term credit for your business is:

Extremely difficultand too costly	1	2	3	4	5	Easyand very affordable

Comment: _____

11) Skilled /Professional labour is:

Difficult to obtain	1	2	3	4	5	Easy to obtain

Comment: _____

12) How is the quality of work performed by professional labour:

Not of a very high quality	1	2	3	4	5	Is outstanding

Comment: _____

13) Professional labour is:

Too costly	1	2	3	4	5	Very affordable

Comment: _____

14) Local/Entry-level labour is:

Difficult to obtain	1	2	3	4	5	Easy to obtain

Comment: _____

15) Local/Entry-level labour is:

Too costly	1	2	3	4	5	Very affordable

Comment: _____

16) Local/Entry-level labour is:

Not of a very high quality	1	2	3	4	5	High quality

Comment: _____

17) Access to natural resources (land and water) is:

Limited	1	2	3	4	5	Readily available

Comment: _____

18) The impact of pests and diseases on production and storage of cocoa is:

Very severe	1	2	3	4	5	Not too serious

Comment: _____

19) Your location's suitability for cocoa production/storage/cocoa exports/processing/input or service supply is:

Not suitable	1	2	3	4	5	Appropriate

Comment: _____

20) Start up and production costs are:

Too costly	1	2	3	4	5	Very affordable

Comment: _____

21) The impact of climate/weather variation (unexpected conditions e.g. drought, too much rainfall/flooding) affects your business:

Negatively	1	2	3	4	5	Positively

Comment: _____

22) The productivity level of your business is:

Very low	1	2	3	4	5	Very high

Comment: _____

23) The production efficiency (input : output relation) level of your business:

Very low	1	2	3	4	5	Very high

Comment: _____

DEMAND/MARKET FACTORS

1) Local market size is:

Unable to handle large volumes	1	2	3	4	5	Large enough and growing in demand

Comment: _____

2) Local buyer of cocoa/ cocoa inputs/processed cocoa are:

Slow to adopt new products and processes	1	2	3	4	5	Actively seeking out new products and processes

Comment: _____

3) The growth in volume of the local market is: (Capacity to handle increasing volumes)

Too slow	1	2	3	4	5	Large enough and fast enough

Comment: _____

4) The international Cocoa export market is:

Too small	1	2	3	4	5	Large enough

Comment: _____

5) The diversity (based on volume and variety) of new (more lucrative) international markets is:

Similar	1	2	3	4	5	Varied

Comment: _____

6) The impact of seasonality and availability of the Cameroonian cocoa Industry's competitiveness:

Negatively	1	2	3	4	5	Positively

Comment: _____

7) Standard quality of cocoa in the international market is:

Too low	1	2	3	4	5	Too high to meet up with

8) Identification and access to new buyers and markets for your product is:

Extremely difficult and costly	1	2	3	4	5	Easy and affordable

Comment: _____

RELATED AND SUPPORTING INDUSTRIES

1) Financial service providers generally:

Limit your business' competitiveness	1	2	3	4	5	Promotes your business' competitiveness

Comment: _____

2) Private-funded scientific research institutions are:

None-existent	1	2	3	4	5	The best in their fields

Comment: _____

3) Government-funded scientific research institutions are:

None-existent	1	2	3	4	5	The best in their fields

Comment: _____

4) Extension and training officers are:

Incompetent	1	2	3	4	5	Highly competent

5) Who provides such extension workers?

Comment: _____

6) Electricity supply in your area:

Constraints competitiveness	1	2	3	4	5	Enhances competitiveness

7) Is the electricity provided by the government or privately bought?

Comment: _____

8) Telecommunication services:

Constraint competitiveness	1	2	3	4	5	Enhance competitiveness

Comment: _____

9) Availability of local suppliers of primary inputs (fertilizers, pesticides, improved seeds:

Largely non-existing andlimited supply	1	2	3	4	5	Numerous and providesall necessary input components

10) Are the inputs supplied by the government of private supplied:

Comment: _____

11) How often are this inputs supplied/available:

Never available when needed	1	2	3	4	5	Always available

Comment: _____

12) Availability of drying/storage and packing/processing facilities:

Not available	1	2	3	4	5	Readily available

Comment: _____

13) These facilities are provided by:

Comment: _____

14) The cost of storage and packing/product handling facilities:

Extremely high	1	2	3	4	5	Affordable

Comment: _____

15) Availability and reliability of transport system (e.g. delivery vehicles):

Unavailable and unreliable	1	2	3	4	5	Readily available and trustworthy

Comment: _____

16) Necessary infrastructure requirements for export purposes: (E.g. facilities at the Douala port)

Insufficient and hinders competitiveness	1	2	3	4	5	Sufficient and improves competitiveness

Comment: _____

FIRM STRATEGY, STRUCTURE AND RIVALRY

1) The management of information flow from primary suppliers (inputs/cocoa) to your company is:

Inadequate	1	2	3	4	5	Excellent

Comment: _____

2) The flow and use of information from customers (farmers/input suppliers) to your company to inform strategy is:

Inadequate	1	2	3	4	5	Excellent

Comment: _____

3) Competition in the local market is:

Very limited	1	2	3	4	5	Very intense

Comment: _____

4) Entry of new competitors:

Almost never occurs	1	2	3	4	5	Is common in the local market

Comment: _____

5) Competition in international market is:

Very limited	1	2	3	4	5	Very intense

Comment: _____

6) Your current resource (land, labour and capital) base to support projected Date Palm Fruits operations:

Insufficient	1	2	3	4	5	Sufficient

7) Cocoa productions competition for resources (land, human and capital) from other agricultural activities:

Not Competitive at all	1	2	3	4	5	Very competitive

Comment: _____

8) How often do you/your firm/agency review business/farming strategies?

	1	2	3	4	5	
Hardly						Very often

9) How often do you meet with your clients (input suppliers/ buyers or cocoa farmers) in the supply chain to discuss business plans?

Hardly	1	2	3	4	5	Very often

Comment: _____

GOVERNMENT SUPPORT AND POLICIES

1) Cameroon's trade policy:

	1	2	3	4	5	
Constraints your company's competitiveness						Enhances your company's competitiveness

Comment: _____

2) Cameroon's labour policy (e.g. minimum wage and age of employment):

Constraints your company's competitiveness	1	2	3	4	5	Enhances your company's competitiveness

Comment: _____

3) Cameroon's financial and credit policy (e.g. bank's policy on loans):

Limits your company's competitiveness	1	2	3	4	5	promotes your company's competitiveness

Comment: _____

4) Cameroon's macro-economic policy (taxes):

Constraints your company's competitiveness	1	2	3	4	5	Enhances your company's competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

5) Cameroon's agricultural policy (e.g. Agric. Shows, agricultural incentives):

Constraints your company's competitiveness	1	2	3	4	5	Enhances your company's competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

6) Namibia's BEE policy:

1	2	3	4	5

Constraints your company's competitiveness						Is a opportunity to increase your firm's competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

7) How reliable is the political system?

Very unreliable	1	2	3	4	5	Very reliable

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

8) The trustworthiness of the politicians is:

Very low	1	2	3	4	5	Very high

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

9) Regulatory standards (e.g. Products standards, energy, safety, and environment) in your opinion are:

Lax or non-existent	1	2	3	4	5	Among the world's most stringent

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

10) Obeying regulatory standards:

Obstructs competitiveness	1	2	3	4	5	Increases competitiveness by promoting improvement

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

11) The taxation system:

Impedes business investment	1	2	3	4	5	Promotes business investment

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

13) The effect of corruption on business' competitiveness:

Limits business investment	1	2	3	4	5	Promotes business investment

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

CHANCE OF OPPORTUNITY FACTORS	(factors over which your firm or project has no control and are of an external nature to the firm, industry and country)

1) The current price/exchange rate:

Constraints your company's competitiveness	1	2	3	4	5	Enhances your company's competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

2) The price/exchange rate fluctuations:

Constraints your company's competitiveness	1	2	3	4	5	Enhances your company's competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

3) The ability of the Cocoa industry to fully utilise the effect of unfavourable weather conditions on competitors:

Incapable	1	2	3	4	5	Capable

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

4) Social unrest (e.g. strikes)

Imposes significant costs to your company	1	2	3	4	5	Does not impose significant costs to your company

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

5) The Cameroonian political system in general:

Hinders competitiveness	1	2	3	4	5	Promotes competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

6) Crime (e.g. theft)

Imposes significant costs to your company	1	2	3	4	5	Does not impose significant costs to your company

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

7) Health -HIV/AIDS, TB, Malaria/ typhoid etc.:

Imposes significant costs to your company	1	2	3	4	5	Does not impose significant costs to your company

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

8) Economic development and growth in Cameroon:

Constraints your company's competitiveness	1	2	3	4	5	Is a opportunity to increase your firm's competitiveness

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

9) To what extent do international/world events impact on your competitiveness? (E.g. warfare/conflicts, international strikes etc.)

Big impact	1	2	3	4	5	No impact

The relevance of this factor is:

Not Relevant	1	2	3	4	5	Highly Relevant

Comment: _____

GENERAL QUESTIONS - In your opinion:

1. What are the **5** main factors that enhance the competitive performance of your industry?

a _____

b _____

c _____

d _____

e _____

2. What are the **5** main factors that constrain the competitive performance of your industry?

a _____

b _____

c _____

d _____

e _____

3. Who are the most threatening competitors (both international and local)

International _____

_____

Local _____

_____

4. Do you think the current strength of the industry is sufficient to cope with competition? If not, what could be done?

_____

_____

_____

5. What are the main factors affecting your business strategy? Please list five in order of importance.

_____

_____

_____

_____

APPENDIX C: List of 72 factors and grouping all factors into the determinants of competitiveness for the Cameroonian cocoa industry

Factors of competitiveness: Cameroonian cocoa Industry	**Impact ratings cluster 1**	**Impact ratings Cluster 2**	**Impact ratings Total industry**
General infrastructure	1.6	2	1.63
Distance to market	2.5	2	2.06
Transaction cost	1.3	2.5	1.14
Transport means	1.2	2.8	1.80
Quality of technology	2.6	3	2.51
Access to quality technology	2.3	2.4	2.42
Cost of technology	2	2.5	2.10
Electricity cost	1.8	2.5	1.90
Obtaining S.T credit	1.3	2.5	1.38
Obtaining L.T credit	1.7	2.3	1.70
Availability of skilled labour	1.8	2.3	1.95
Quality of skilled labour	3.5	3	3.12
Skilled labour cost	2.3	2.2	2.16
Availability of local labour	3.5	3.2	3.21
Local labour cost	2.5	3.3	2.73
Quality of local labour	2.3	1.8	1.90
Access to natural resources	2.5	2.8	2.66
Impact of pest and diseases	2.5	2.3	2.63
Location's suitability for cocoa	4.1	3.5	3.75
Startup and production cost	1.6	3.3	1.86
Climate impact	2.3	1.5	1.78
Productivity level	2.2	3.4	2.46
Production efficiency	2.1	3.1	2.41
Local market size	2.9	3.4	2.95
Adaptability of local consumers	1.8	2.1	1.78
Local market growth volume	2.3	2	2.10
International market size	4.6	3.5	4.10
Diversity of internal markets	3	3.5	3.21
Impact of seasonality	3.1	3.6	3.28
International cocoa quality	3.5	3.4	3.30
Access to new markets	3	1.2	2.08
Financial services impact	2.01	3	2.03
Presence of private funded research	1.4	1.6	1.50
Presence of government funded research	4	3	3.46
Competency of extension officers	4	3.5	3.68

Electricity supply competitiveness impact	2	4	2.33
Telecommunication services	3	3.4	3.18
Existence of primary input suppliers	2.6	2.7	2.67
Primary input availability	3	2.8	2.89
Availability of facilities for drying, storage, etc.	2.7	3	2.85
Cost of storage and packing facilities	2	3	2.34
Reliable transport availability	2	2.5	2.07
Export infrastructure	2.8	3	2.65
Flow of information from primary input suppliers	2.6	3.5	2.49
Flow of information from customers	3.3	1.8	2.45
Local market competition	4.2	3	3.58
Entry of new local competitors	4.6	2.8	4.02
International market competition	4.8	4	4.47
Current resource use	3	3	3.00
Resource competition from other agric. activities	3.1	3.3	3.07
Frequency of business strategy review	2.4	3.5	2.82
Frequency of meeting with clients	2.8	2.5	2.77
Cameroon trade policy	3	2.6	2.84
Cameroon labour policy	3	2.5	2.64
Cameroon financial and credit policy	1.6	3.1	1.80
Cameroon macro-economic policy	2.2	2.5	2.24
Cameroonian agric. policy	4.2	2.8	3.50
Political system reliability	2.5	3	2.13
Politicians' trustworthiness	2	2.3	1.92
Regulatory standards	2.6	3.2	2.83
Obeying regulatory standards	3.6	2.8	3.27
Taxation system	2.6	1.8	2.00
Corruption impact	1.8	2.1	1.69
Current price/exchange rate	1.6	2.2	1.80
Price/ER fluctuations	1.8	1.5	1.60
Ability to utilize adverse weather conditions	2.3	3.1	2.55
Social unrest	2.6	2	2.24
Cameroon political system	2.4	2.2	2.20
Impact of crime	2.4	3	2.22
Health impact	2	2.2	1.98
Economic development and growth	2.5	4	3.17

International events	1.4	3	1.74

**Scores out of 5*

Appendix D: Principal Component Analysis for Porter diamond factors

Appendix D-1

Communalities

	Initial	Extraction
P1	1.000	.717
P2	1.000	.720
P3	1.000	.758
P4	1.000	.774
P5	1.000	.638
P6	1.000	.800
P7	1.000	.720
P8	1.000	.814
P9	1.000	.780
P10	1.000	.711
P11	1.000	.675
P12	1.000	.762
P13	1.000	.839
P14	1.000	.784
P15	1.000	.811
P16	1.000	.799
P17	1.000	.782
P18	1.000	.842
P19	1.000	.584
P20	1.000	.562
P21	1.000	.788
P22	1.000	.870
P23	1.000	.790

Extraction Method: Principal Component Analysis

Most of the extraction values are high, thus indicating the variance in each variable accounted for by the components. The extracted components represent the variables well.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.289	27.346	27.346	6.289	27.346	27.346	3.615	15.718	15.718
2	3.402	14.792	42.138	3.402	14.792	42.138	3.264	14.193	29.911
3	2.184	9.497	51.635	2.184	9.497	51.635	3.136	13.634	43.544
4	1.623	7.055	58.690	1.623	7.055	58.690	2.047	8.899	52.443
5	1.415	6.154	64.844	1.415	6.154	64.844	1.957	8.509	60.952
6	1.246	5.417	70.260	1.246	5.417	70.260	1.732	7.528	68.481
7	1.159	5.041	75.302	1.159	5.041	75.302	1.569	6.821	75.302
8	0.899	3.909	79.210						
9	0.752	3.270	82.480						
10	0.694	3.016	85.497						
11	0.577	2.509	88.006						
12	0.489	2.126	90.132						
13	0.364	1.581	91.713						
14	0.323	1.402	93.115						
15	0.302	1.312	94.427						
16	0.265	1.150	95.577						
17	0.242	1.053	96.630						
18	0.178	0.775	97.405						
19	0.162	0.706	98.111						
20	0.152	0.662	98.773						
21	0.114	0.497	99.270						
22	0.106	0.460	99.730						

23	0.062	0.270	100.000						

Extraction Method: Principal Component Analysis

Note: The first seven components had Eigenvalues larger than 1 and was included in the analysis

Rotated component matrix

	Components						
	1	2	3	4	5	6	7
P1	0.807			0.157			-0.137
P8	0.763				0.275		0.378
P2	0.732	0.220	-0.197	0.297			
P7	0.658	0.318		0.235		0.322	0.120
P4	0.542	0.369	0.133	-0.203	0.517	0.128	
P13		0.904					
P22	0.267	0.709	0.394			-0.259	0.246
P11		0.697	-0.303	0.246		0.164	
P10		0.648	0.215	0.222	0.241	0.365	
P14			0.879				
P15	-0.321		0.709	0.295		0.325	
P17		0.109	0.611	0.333	-0.121	0.444	0.254
P12	0.407	0.412	-0.610	0.160		0.120	0.119
P23	0.369	0.520	0.540				0.289
P6	0.365	0.146	0.170	0.707	0.186	0.249	0.141
P20	0.240	0.133		0.685			0.110
P19	-0.125	0.126	0.402	0.556		-0.277	
P9			-0.229	0.173	0.816		0.130
P3	0.491	0.168		0.135	0.682		
P5	0.335		0.394		0.536	0.252	
P16	0.201	0.118	0.112			0.845	
P18		-0.286				-0.259	-0.828
P21		-0.301	0.214	0.386	0.176	-0.261	0.627

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization.

[a] Rotation converged in 9 iterations

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An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater for that component and was less than 0.40 for the other. See yellow cells in table above.

Appendix D-2 Demand/Market Factor Conditions

Communalities

Most of the extraction values are high, thus indicating the variance in each variable accounted for by the components. The extracted components represent the variables well.

	Initial	Extraction
D1	1.000	.672
D2	1.000	.746
D3	1.000	.799
D4	1.000	.455
D5	1.000	.448
D6	1.000	.697
D7	1.000	.263
D8	1.000	.620

Extraction Method: Principal Component Analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1	3.037	37.959	37.959	3.037	37.959	37.959	2.885	36.065
2	2	1.664	20.803	58.762	1.664	20.803	58.762	1.816	22.697
3	3	0.898	11.220	69.983					
4	4	0.755	9.438	79.420					
5	5	0.607	7.581	87.002					
6	6	0.452	5.649	92.651					
7	7	0.364	4.552	97.202					
8	8	0.224	2.798	100.000					

Extraction Method: Principal Component Analysis

Note: The first two components had Eigen values larger than 1 and was included in the analysis

Rotated Component matrix

	Components	
	1	2
D1	0.806	0.416
D6	0.806	-0.219
D8	0.677	0.402
D4	0.663	0.125
D5	0.635	0.213
D7	-0.491	0.150
D3		0.889
D2	0.187	0.843

An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater for that component and was less than 0.40 for the other. See yellow cells in table on the left.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

[a.] Rotation converged in 3 iterations.

Appendix D-3 Related and supporting industries

Communalities

	Initial	Extraction
S1	1.000	.655
S2	1.000	.793
S3	1.000	.660
S4	1.000	.543
S6	1.000	.814
S8	1.000	.692
S9	1.000	.779
S11	1.000	.759
S12	1.000	.652
S14	1.000	.769
S15	1.000	.714
S16	1.000	.737

Extraction Method: Principal Component Analysis.

Most of the extraction values are high, thus indicating the variance in each variable accounted for by the components. The extracted components represent the variables well

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.967	24.726	24.726	2.967	24.726	24.726	2.821	23.506	23.506
2	2.764	23.030	47.756	2.764	23.030	47.756	2.252	18.766	42.273
3	1.653	13.779	61.535	1.653	13.779	61.535	2.185	18.208	60.481
4	1.181	9.844	71.379	1.181	9.844	71.379	1.308	10.898	71.379
5	.806	6.718	78.097						
6	.686	5.714	83.811						
7	.592	4.933	88.745						
8	.423	3.526	92.271						
9	.349	2.904	95.175						
10	.251	2.093	97.268						
11	.195	1.627	98.895						
12	.133	1.105	100.000						

Extraction Method: Principal Component Analysis.

The first 4 components had Eigen values larger than 1 and was included in the analysis

	Components			
	1	2	3	4
S6	.859	.119		-.237
S14	.847	.135	-.185	
S15	.825		.179	
S16	.741	-.426		
S3		.798		-.155
S12		.756		.265
S8	.223	.689	.153	-.380
S11		-.174	.839	-.154
S9	.152	.132	.831	.220
S1	-.241	.464	.591	.180
S4		.302	.580	-.338
S2				.887

An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater for that component and was less than 0.40 for the other. See yellow cells in table on the left.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 4 iterations.

Appendix D-4 Firm strategy, structure and rivalry

Communalities

	Initial	Extraction
F1	1.000	.808
F2	1.000	.760
F3	1.000	.428
F4	1.000	.806
F5	1.000	.770
F6	1.000	.387
F7	1.000	.449
F8	1.000	.827
F9	1.000	.722

Extraction Method: Principal Component Analysis.

Most of the extraction values are high, thus indicating the variance in each variable accounted for by the components. The extracted components represent the variables well.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.189	35.432	35.432	3.189	35.432	35.432	2.360	26.226	26.226
2	1.700	18.891	54.323	1.700	18.891	54.323	1.926	21.400	47.626
3	1.068	11.868	66.191	1.068	11.868	66.191	1.671	18.565	66.191
4	.911	10.119	76.310						
5	.761	8.450	84.761						
6	.672	7.472	92.233						
7	.320	3.552	95.785						
8	.257	2.854	98.638						
9	.123	1.362	100.000						

Extraction Method: Principal Component Analysis.
The first 3 components had Eigen values larger than 1 and was included in the analysis

Rotated Component matrix

	Components		
	1	2	3
F8	.905		
F9	.808	.171	-.198
F7	.638	.164	-.122
F5		.848	-.223
F4	.401	.803	
F3		.606	.245
F1	-.269	-.256	.818
F2	-.492		.720
F6		.262	.562

An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater for that component and was less than 0.40 for the other. See yellow cells in table on the left.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations.

Appendix D-5 Government support and policy

Communalities

	Initial	Extraction
G1	1.000	.819
G2	1.000	.700
G3	1.000	.693
G4	1.000	.811
G5	1.000	.721
G6	1.000	.674
G7	1.000	.567
G8	1.000	.774
G9	1.000	.924
G10	1.000	.639
G11	1.000	.654

Most of the extraction values are high, thus indicating the variance in each variable accounted for by the components. The extracted components represent the variables well.

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.468	31.527	31.527	3.468	31.527	31.527	2.525	22.958	22.958
2	1.915	17.405	48.933	1.915	17.405	48.933	2.256	20.506	43.464
3	1.492	13.561	62.494	1.492	13.561	62.494	2.015	18.316	61.780
4	1.102	10.020	72.514	1.102	10.020	72.514	1.181	10.734	72.514
5	.833	7.572	80.086						
6	.609	5.534	85.620						
7	.494	4.491	90.111						
8	.420	3.816	93.927						
9	.315	2.867	96.794						
10	.195	1.777	98.570						
11	.157	1.430	100.000						

Extraction Method: Principal Component Analysis.
The first 4 components had Eigen values larger than 1 and was included in the analysis

Rotated Component matrix

	Components			
	1	2	3	4
G4	.871		.212	
G1	.855	.111	-.272	
G3	.688	.116	.260	-.373
G2	.584	-.107	.538	-.239
G6		.817		
G10	.115	.782	-.113	
G11	.289	.689	.308	
G7	-.119	.621	.349	-.215
G5			-.845	
G8	.320	.259	.771	
G9				.955

An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater for that component and was less than 0.40 for the other. See yellow cells in table on the left.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations.

Appendix D-5 Chance factors

Communalities

	Initial	Extraction
C1	1.000	.777
C2	1.000	.489
C3	1.000	.611
C4	1.000	.905
C5	1.000	.687
C6	1.000	.776
C7	1.000	.901
C8	1.000	.720
C9	1.000	.908

Extraction Method: Principal Component Analysis.

Most of the extraction values are high, thus indicating the variance in each variable accounted for by the components. The extracted components represent the variables well.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.936	43.733	43.733	3.936	43.733	43.733	2.900	32.227	32.227
2	1.734	19.264	62.998	1.734	19.264	62.998	2.455	27.274	59.501
3	1.105	12.273	75.271	1.105	12.273	75.271	1.419	15.770	75.271
4	.816	9.063	84.334						
5	.637	7.076	91.409						
6	.376	4.181	95.590						
7	.271	3.015	98.605						
8	.098	1.093	99.699						
9	.027	.301	100.000						

Extraction Method: Principal Component Analysis
The first 3 components had Eigen values larger than 1 and was included in the analysis

Rotated Component matrix

	Components		
	1	2	3
C7	.941		-.112
C3	.750	.131	.177
C2	.693		
C1	.636	.571	.214
C6	.599	.445	-.468
C4		.947	
C9	.164	.891	-.294
C8		-.277	.802
C5	.417	.365	.616

An item was interpreted as loading on a given component (i.e. not being highly correlated) if the factor loading was 0.40 or greater for that component and was less than 0.40 for the other. See yellow cells in table on the left.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 5 iterations.